HITACHI

No. 0106

CP2025T
C2125T
CL2125T
CP2125T
C2142N
CL2142AN
CP2142AN
C2842N
CL2842AN
CP2842AN



SERVICE MANUAL
MANUEL D'ENTRETIEN
WARTUNGSHANDBUCH

CAUTION:
Before servicing this chassis, it is important that the service technician read the "Safety Precautions" and "Product Safety Notices" in this service manual.

ATTENTION:
Avant d'effectuer l'entretien du châassis, le technicien doit lire les «Précautions de sécurité» et les «Notices de sécurité du produit» présentés dans le présent manuel.

VORSICHT:
Vor Öffnen des Gehäuses hat der Service-Ingenieur die „Sicherheitshinweise" und „Hinweise zur Produktsicherheit" in diesem Wartungshandbuch zu lesen.

Data contained within this Service manual is subject to alteration for improvement.

Les données fournies dans le présent manuel d'entretien peuvent faire l'objet de modifications en vue de perfectionner le produit.

Die in diesem Wartungshandbuch enthaltenen Spezifikationen können sich zwecks Verbesserungen ändern.

August 2000

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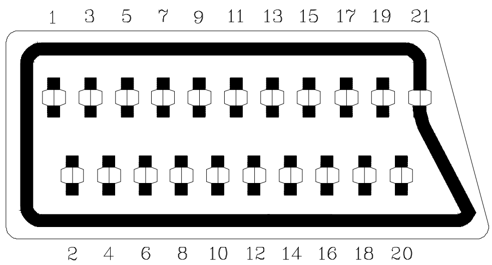
DO NOT CHANGE ANY MODULE UNLESS THE SET IS SWITCH OFF
The mains supply side of the switch mode power supply transformer is live.
Use an isolating transformer.
The receivers fulfill completely the safety requirements.

Safety precautions:
Servicing of this TV should only be carried out by a qualified person.
- Components marked with the warning symbol on the circuit diagram are critical for safety and must only be replaced with an identical component.
- Power resistor and fusable resistors must be mounted in an identical manner to the original component.
- When servicing this TV, check that the EHT does not exceed 26kV.

TV Set switched off:
Make short-circuit between HV-CRT clip and CRT ground layer.
Short C804 (150mF) before changing IC802 or other components in primary side of SMPS.

Measurements:
Voltage readings and oscilloscope traces are measured under following conditions.
Antenna signal 60dB from colourbar generator. (100% white, 75% colour saturation)
Brightness, contrast, colour set for a normal picture.
Mains supply, 220VAC, 50Hz.

PERI-TV SOCKET



SCART 1 (SC050)

1	Audio right output	0.5Vrms / 1K
2	Audio right input	0.5Vrms / 10K
3	Audio left output	0.5Vrms / 1K
4	Ground AF	
5	Ground Blue	
6	Audio left input	0.5Vrms / 10K
7	Blue input	0.7Vpp / 75ohm
8	AV switching input	0-12VDC /10K
9	Ground Green	
10	-	
11	Green input	0.7Vpp / 75ohm
12	-	
13	Ground Red	
14	Ground Blanking	
15	Red input	0.7Vpp / 75ohm
16	Blanking input	0-0.4VDC, 1-3VDC / 75ohm
17	Ground CVS output	
18	Ground CVS input	
19	CVS output	1Vpp / 75ohm
20	CVS input	1Vpp / 75ohm
21	Ground	

SCART 2 (SC051)

1	Audio right output	0.5Vrms / 1K
2	Audio right input	0.5Vrms / 10K
3	Audio left output	0.5Vrms / 1K
4	Ground AF	
5	Ground Blue	
6	Audio left input	0.5Vrms / 10K
7	Blue input	0.7Vpp / 75ohm
8	AV switching input	0-12VDC /10K
9	Ground Green	
10	-	
11	-	
12	-	
13	Ground Red	
14	Ground Blanking	
15	-	
16	-	
17	Ground CVS output	
18	Ground CVS input	
19	CVS output	1Vpp / 75ohm
20	CVS input	1Vpp / 75ohm
21	Ground	

1. INTRODUCTION
11AK19 is a 90ø and 110ø chassis capable of driving 20-21”,24”,25”,28-29”,32”,33” tubes at appropriate currents.
The chassis is capable of working in both PAL and SECAM. The sound system is capable of giving 6watts RMS output into a load of 8ohms.
One 8 page simple TELETEXT, TOPTEXT and FASTEXT is provided.
The chassis is equipped with 21-pin scart connectors which can accept via scart the SVHS format from VCRs so equipped.

2. SMALL SIGNAL PART WITH TDA884X
The TDA8840/8842/8844 combine all small signal functions required for a colour TV receiver, except tuning.

2.1. Vision IF amplifier
The IF-amplifier contains 3 AC-coupled control stages with a total gain control range which is higher than 66dB.
The sensitivity of the circuit is comparable with that of modern IF-IC’ s. The video signal is demodulated by means of a PLL carrier regenerator. This circuit contains a frequency detector and a phase detector. The AFC output is obtained by using the VCO control voltage of the PLL and can be read via the I²C-bus. For fast search tuning systems the window of the AFC can be increased with a factor 3. The setting is realised with the AFW bit.
Depending on the type the AGC-detector operates on top-sync level (single standard versions) or on top sync and top white-level (multi standard versions). The demodulation polarity is switched via the I²C-bus. The AGC detector time-constant capacitor is connected externally. This mainly because of the flexibility of the application. The time-constant of the AGC system during positive

modulation is rather long to avoid visible variations of the signal amplitude. To improve the speed of the AGC system a circuit has been included which detects whether the AGC detector is activated every frame period. When during 3 frame periods no action is detected the speed of the system is increased. For signals without peak white information the system switches automatically to a gated black level AGC. Because a black level clamp pulse is required for this way of operation the circuit will only switch to black level AGC in the internal mode.

The circuits contain a video identification circuit which is independent of the synchronisation circuit. Therefore search tuning is possible when the display section of the receiver is used as a monitor. The ident output is supplied to the tuning system via the I²C-bus. The video ident circuit can be made less sensitive by means of the STM bit. This mode can be used during search tuning to avoid that the tuning system will stop at very weak input signals.

2.2. Video Switches

The circuits have two CVBS inputs (internal and external CVBS) and Y/C input. When the Y/C input is not required the Y input can be used as third CVBS input. The selection of the various sources is made via the I²C-bus. The circuit has one CVBS output.

2.3. Sound Circuit

The sound band pass and trap filters have to be connected externally. The filtered intercarrier signal is fed to a limiter circuit and is demodulated by means of a PLL demodulator. This PLL circuit tunes itself automatically to the incoming carrier signal so that no adjustment is required.

The volume is controlled via the I²C-bus. The deemphasis capacitor has to be connected externally. The non-controlled audio signal can be obtained from this pin. The FM demodulator can be muted via the I²C-bus. This function can be used to switch-off the sound during a channel change so that high output peaks are prevented. The TDA8840/8842 contain an automatic volume levelling (AVL) circuit which automatically stabilises the audio output signal to a certain level which can be set by the viewer by means of the volume control. This function prevents big audio output fluctuations due to variations of the modulation depth of the transmitter. The AVL function can be activated via the I²C-bus.

2.4. Synchronisation circuit

The sync seperator is preceded by a controlled amplifier which adjusts the sync pulse amplitude to a fixed level. These pulses are fed to the slicing stage which is operating at 50% of the amplitude. The separated sync pulses are fed to the first phase detector and to the coincidence detector. This coincidence detector is used to detect whether the line oscillator is synchronised and can also be used for transmitter identification. The first PLL has a very high statical steepness so that the phase of the picture is independent of the line frequency.

The horizontal output signal is generated by means of an oscillator which is running at twice the line frequency. Its frequency is divided by 2 to lock the first control loop to the incoming signal. The time-constant of the loop can be forced by the I²C-bus (fast or slow).

If required the IC can select the time-constant depending on the noise content of the incoming video signal.

To protect the horizontal output transistor, the horizontal drive is immediately switched off when a power-on-reset is detected. The drive signal is switched-on again when the normal switch-on procedure is followed.

Via the I²C-bus, adjustments can be made of the horizontal and vertical geometry. The vertical sawtooth generator drives the vertical output drive circuit which has a differrential output current. For the EW drive a single ended current output is available.

When the horizontal scan is reduced to display 4 : 3 pictures on a 16 : 9 picture tube an accurate video blanking can be switched on to obtain well defined edges on the screen.

Overvoltage conditions can be detected via the EHT tracking pin.When an overvoltage condition is detected the horizontal output drive signal will be switched-off via the slow stop procedure but it is also possible that the drive is not switched-off and that just a protection indication is given in the I²C-bus output byte. The choice is made via the input bit PRD.

2.5. Chroma and Luminance processing

The circuits contain a chroma bandpass and trap circuit. The filters are realised by means of gyrator circuits and they are automatically calibrated by comparing the tuning frequency with the X-tal frequency of the decoder.

The luminance delay line and the delay for the peaking circuit are also realised by means of gyrator circuits.

The centre frequency of the chroma bandpass filter is switchable via the I²C-bus so that the performance can be optimised for “front-end” signals and external CVBS signals.

During SECAM reception the centre frequency of the chroma trap is reduced to get a better suppression of the SECAM carrier frequencies.

2.6. Colour Decoder

The decoder contains an alignment-free X-tal oscillator, a killer circuit and two colour difference demodulators. The 90° phase shift for the reference signal is made internally.

The IC contains an automatic colour limiting (ACL) circuit which prevents that oversaturation occurs when signals with a high chroma-to-burst ratio are received. The ACL circuit is designed such that it only reduces the chroma signal and not the burst signal. This has the advantage that the colour sensitivity is not affected by this function.

The base-band delay line is integrated in the PAL/SECAM IC’ s.

The demodulated colour difference signals are internally supplied to the delay line. The matrixed signals are externally available. The colour difference matrix switches automatically between PAL/SECAM and NTSC, however, it is also possible to fix the matrix in the PAL standard.

Which colour standard the IC can decode depends on the external X-tals. The X-tal to be connected to pin 34 must have a frequency of 3.5 MHz (NTSC-M, PAL-M or PAL-N) and pin 35 can handle X-tals with a frequency of 4.4 and 3.5 MHz. To prevent calibration problems of the horizontal oscillator the external switching between the 2 X-tals should be carried out when the oscillator is forced to pin 35. For a reliable calibration of the horizontal oscillator it is very important that the X-tal indication bits (XA and XB) are not corrupted. For this reason the X-tal bits can be read in the output bytes so that the software can check the I²C-bus transmission.

2.7. RGB output circuit and black-current stabilisation

The colour-difference signals are matrixed with the luminance signal to obtain the RGB-signals. The TDA 884X device has one linear RGB input. This RGB signal can be controlled on contrast and brightness.

The output signal has an amplitude of about 2 volts black-to-white at nominal input signals and nominal settings of the controls.

To increase the flexibility of the IC it is possible to insert OSD and/or teletext signals directly at the RGB outputs.

This insertion mode is controlled via the insertion input (pin 26 in the S-DIP 56- and pin 38 in the QFP-64 level). This blanking action at the RGB outputs has some delay which must be compansated externally.

To obtain an accurate biasing of the picture tube a “Continuous Cathode Calibration” circuit has been developed.

This function is realised by means of a 2-point black level stabilisation circuit.

When the TV receiver is switched-on, the RGB output signals are blanked and the black current loop will try to set the right picture tube bias levels.Via the AST bit a choice can be made between automatic start-up or a start-up via the m-processor.

3. TUNER

Either a PLL or a VST tuner is used as a tuner.
UV1316 (VHF/UHF) is used as a PLL tuner. For only PALM/N, NTSC M applications UV 1336 is used as the PLL tuner. UV 1315 (VHF/UHF) is used as a VST Tuner.

Channel coverage of UV1316:

BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
	CHANNELS RANGE (MHz)	FREQUENCY	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	E2 to C	48.25to 82.25(1)	S01to S08	69.25to 154.25
Mid Band	E5 to E12	175.25to 224.25	S09to S38	161.25to 439.25
High Band	E21 to E69	471.25to 855.25(2)	S39to S41	447.25to 463.25

(1). Enough margin is available to tune down to 45.25 MHz.
(2). Enough margin is available to tune up to 863.25 MHz.

Noise	Typical	Max.	Gain	Min.	Typical	Max.
Low band	: 5dB	9dB	All channels	: 38dB	44dB	52dB
Mid band	: 5dB	9dB	Gain Taper (of-air channels)	: -	-	8dB
High band	: 6dB	9dB				

Channel Coverage UV1336:

BAND	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	2 to D	55.25 to 139.25
Mid Band	E to PP	145.25 to 391.25
High Band	QQ to 69	397.25 to 801.25

Noise is typically 6dB for all channels. Gain is minimum 38dB and maximum 50dB for all channels.

Channel Coverage of UV1315:

BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
	CHANNELS	FREQUENCY RANGE (MHz)	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	E2 to C	48.25 to 82.25 (1)	S01 to S10	69.25 to 168.25
Mid Band	E5 to E12	175.25 to 224.25	S11 to S39	231.25 to 447.25
High Band	E21 to E69	471.25 to 855.25 (2)	S40 to S41	455.25 to 463.25

(1). Enough margin is available to tune down to 45.25 MHz.
(2). Enough margin is available to tune up to 863.25 MHz.

Noise	Typ.	Max.	Gain	Min.	Typ.	Max.
Low band	: 6dB	9dB	All Channels	38dB	44dB	50dB
Mid band	: 6dB	10dB	Gain Taper	-	-	8dB
High band	: 6dB	11dB	(off-air channels)			

4.VIDEO SWITCH TEA6415C

In case of three or more external sources are used, the video switch IC TEA6415C is used. The main function of this device is to switch 8 video input sources on the 6 outputs.
Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of sync. top for CVBS or black level for RGB signals).
Each nominal gain between any input and output is 6.5dB.For D2MAC or Chroma signal the alignment is switched off by forcing, with an external resistor bridge, 5VDC on the input. Each input can be used as a normal input or as a MAC or Chroma input (with external resistor bridge). All the switching possibilities are changed through the BUS.
Driving 75ohm load needs an external resistor.
It is possible to have the same input connected to several outputs.

5. AM DEMODULATOR TDA9830
The TDA9830 is designed for AM-sound demodulation used in L and L' standard.

Sound IF Input:
The sound IF amplifier consists of three AC-coupled differential amplifier stages each with approximately 20dB gain.
At the output of each stage is a multiplier for gain controlling. The overall control range is approximately -6 to +60dB and the frequency response (-3dB) of the IF amplifier is approximately 6 to 70MHz. The steepness of gain control is approximately 10mV/dB.

IF AGC:
The automatic gain control voltage to maintain the AM demodulator output signal at a constant level is generated by a mean level detector.The AGC-detector charges and discharges the capacitor at pin 3 controlled by the output signal of the AM-demodulator compared to an internal reference voltage.The maximum charge/discharge current is approximately 5 mA.

AM-demodulator
The IF amplifier output signal is fed to a limiting amplifier (two stages) and to a multiplier circuit.
However the limiter output signal (which is not any more AM modulated) is also fed to the multiplier, which provides AM demodulation (in phase demodulation). After lowpass filtering (fg @ 400kHz) for carrier rejection and buffering, the demodulator output signal is present at pin 6.

Audio Switch
This circuit is an operational amplifier with three input stages and internal feedback network determining gain (0dB) and frequency response (fg @ 700kHz). Two of the input stages are connected to pin 7 and pin 9, the third input stage to an internal reference voltage. Controlled by the switching pins 10 and 12, one of the three input stages can be activated and a choice made between two different AF signals or mute state. The selected signal is present at pin 8. The decoupling capacitors at the input pins are needed, because the internally generated bias voltage for the input stages must not be influenced by the application in order to avoid DC-plop in case of switching.

Reference Circuit:
This circuit is a band gap stabiliser in combination with a voltage regulation amplifier, which provides an internal reference voltage of about 3.6V nearly independent from supply voltage and temperature. This reference voltage is filtered by the capacitor at pin 4 in order to reduce noise. It is used as a reference to generate all important voltages and currents of the circuit.
For application in 12V power supply concepts, there is an internal voltage divider in combination with a Darlington transistor in order to reduce the supply voltage for all IC function blocks to approximately 6V.

6. DIGITAL TV SOUND PROCESSOR TDA9875
The TDA9875 is a single-chip Digital TV Sound Processor.
Supported standards are M, B/G, D/K, I and L.

Description of the demodulator and decoder section:
SIF Input:
Two input pins are provided, SIF1 e.g. for terrestrial TV and SIF2 e.g. for a satellite tuner. The selected signal is passed through an AGC circuit and then digitized by an 8-bit ADC operating at 24.576MHz.
AGC:
The gain of the AGC amplifier is controlled from the ADC output by means of a digital control loop employing hysteresis.
The AGC has a fast attack behaviour to prevent ADC overloads and slow decay behaviour AGC oscillations.
For AM demodulation AGC must be switched off.
Mixer
The digitized input signal is fed to the mixers, which mix one or both input sound carriers down to zero IF. A 24-bit control word for each carrier sets the required frequency.
FM and AM Demodulation
An FM or AM input signal is fed via a band-limiting filter to a demodulator that can be used for either FM or AM demodulation.
Apart from the standard (fixed) de-emphasis characteristic, an adaptive de-emphasis is available for encoded satellite programs.
A stereo decoder recovers the left and right signal channels from the demodulated sound carriers.
FM Identification:
The identification of the FM sound mode is performed by AM synchronous demodulation of the pilot signal and narrow-band detection of the identification frequencies. The result is available via the I²C-bus interface.
NICAM Demodulation:
The NICAM signal is transmitted in a DQPSK code at a bit rate of 728 kbit/s. The NICAM demodulator performs DQPSK demodulation and feeds the resulting bitstream and clock signal onto the NICAM decoder and, for evaluation purposes, to PCLK (pin 1) and NICAM (pin 2).
NICAM Decoder:
The device performs all decoding functions in accordance with the "EBU NICAM 728 specification". After locking to the frame alignment word, the data is descrambled by applying the defined pseudo-random binary sequence; the device will then synchronise to the periodic frame flag bit C0.
The status of the NICAM decoder can be read out from the NICAM status register by the user. The OSB bit indicates that the decoder has locked to the NICAM data. The VDSP bit indicates that the decoder has locked to the NICAM data and that the data is valid sound data.

7. SOUND OUTPUT STAGE TDA2614/TDA2615/TDA2616Q
TDA2614 is used as the AF output amplifier for mono applications. It is supplied by ±12VDC coming from a separate winding in the SMPS transformer. An output power of 2*6W (THD=0.5%) can be delivered into an 8ohm load.
TDA2615 is used as the AF output amplifier for stereo applications. It is supplied by ±12VDC coming from a separate winding in the SMPS transformer. An output power of 2*6W (THD=0.5%) can be delivered into an 8ohm load.
TDA2616Q is used as the AF output amplifier for stereo and dolby prologic applications. It is supplied by ±16VDC coming from

a separate winding in the SMPS transformer. An output power of 2*12W (THD=0.5%) can be delivered into an 8ohm load.

8. VERTICAL OUTPUT STAGE WITH TDA8351/8356

The TDA8351/8356 vertical deflection circuit can be used in 90° and 110° deflection systems with field frequencies from 50 up to 120Hz. With its bridge configuration the deflection output can be DC coupled with few external components.
Only a single supply voltage for the scan and a second supply for the flyback are needed. The TDA8356 is intended for 90° systems and the TDA8351 is intended for 110° systems.
The drive voltage is amplified by an amplifier and fed to two amplifiers, one is inverting and the other is a non inverting amplifier. The outputs (pins 7 and 4) are connected to the series connection of the vertical deflection coil and feedback resistor Rsense (R702//R703). The voltage across Rsense is fed via pin 9 to correction amplifier, to obtain a deflection current which is proportional to the drive voltage. The supply voltage for the TDA8351/8356 is 15VDC at pin 3. The supply voltage generator has a separate supply voltage of 45VDC at pin 6.

9. VIDEO OUTPUT AMPLIFIER TDA6107Q

The TDA6107Q consists of three monolithic video output amplifiers. The amplifier can be seen as an operational amplifier with negative feedback.
The advantage of negative feedback is that the amplifier characteristics do not play an important role up to certain frequencies.
The internal flash diodes protect the amplifiers against flash over in the picture tube.
The only protections required at the cathode outputs are a flash resistor and a sparkgap.
The TDA6107Q has an internal thermal protection circuit which gives a decrease of the slew rate at high temperatures.
Furthermore, the device needs only one power supply voltage (Vdd).
In contrast to previous types of DMOS video amplifiers, all the external resistors (Rf, Ri and Ra) are integrated, so the gain is fixed and saves 9 resistors.
Furthermore, the reference voltage is integrated, it saves a resistor divider and a decoupling capacitor. So, the replacement value of the TDA6107Q is very high.
The TDA6107Q is provided with a black current data pin. Since TDA884X is used as drive device, no adjustments are required for gain and black setting, as the TDA884X has I²C white point adjustment and black current set-up.

10. SINGLE/MULTISTANDARD VIF/SIF-PLL and FM-PLL/AM DEMODULATOR TDA9818

The TDA9818is an IC for multistandard vision IF signal processing, sound AM and FM demodulation.
It is a gain controlled wide band VIF-amplifier (AC-coupled). It is applicable for IF frequencies of 38.9 MHz, 45.75 MHz and 58.75 MHz. True synchronous demodulation is provided with active carrier regeneration. It has a VCO frequency which can be switchable between L and L accent (alignment external) picture carrier frequency.
The TDA9818 has a SIF input for single reference QSS mode (PLL controlled). SIF AGC detector is to provide gain controlled SIF amplifier. The AM demodulator is without extra reference circuit. The supply voltage is +5VDC at pin 21.

11. COMBFILTER SAA4961

The SAA 4961 is a one-chip, PAL/NTSC combfilter IC with internal delay lines, filters, clock control, synchronisation and signal switches. The combfilter function is realised in a switched capacitor technique, so it has time discrete but amplitude continuous processing.
The Y/CVBS input is first clamped and then fed to the delay-line and combfilter section via a low pass pre-filter.
This filter can be bypassed via the external LPF-on pin. This pin is internally pulled up, to put the filter default on. The Y/CVBs input is also fed to the sync seperator, where horizontal and vertical reference pulses are made.
Bypass mode can be forced via BYP (pin 3).FSC (pin 1) is the subcarrier input which is connected to the colour decoder.
Input FSCSW pin indicates if fsc or 2*fsc is used.
The Sys1,2 pins (20, 23) indicate which system standard is processed. Sys2 is internally pulled up, Sys1 is internally pulled down. Therefore when the Sys1,2 inputs are left open, automatically PAL 4.43MHz is forced.
SAA4961output pin 15 “CVBS” can be used for parallel-synced teletext decoders, to guarantee that the teletext display always has a correct timing relation with the main picture. Comb filter is disabled by setting SAA4961 pin 3 “BYP” high.

12. POWER SUPPLY (SMPS)

The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC MC44604 which is designed for driving, controlling and protecting switching transistor of SMPS. The transformer produces 150/115V for FBT input, ±14V for audio output IC, S+5V for microcontroller, +15V for vertical output (field scan) and +33V for tuner and some other ICs and transistors.

13. MICROCONTROLLER SDA525X

The device is TV TEXT tuning and control system based on the SDA 525X TV TEXT microcontroller. It is designed for a low cost mono TV-SET with analogue picture and sound control. Neverthless the system offers an on screen display (OSD) and IR remote control of all functions.

SDA525X has the following features:

- Display of program number, channel number, TV standard, analogue values, sleep timer, parental control, and mute is done by OSD.
- Single LED for IR active, standby and on mode indication.
- 1 Control line to select external source.
- 3 Control lines for TV standard selection.
- Frequency synthesis tuning (62.5 kHz steps)
- 192 step fine tuning
- Channels corresponding to standards B/G, OIRT, L and I (I+)
- Mono sound control by analogue voltage
- System configuration with service mode

14. SERIAL ACCESS CMOS 8K (1024*8) EEPROM ST24C08

The ST24C08 is a 8Kbit electrically erasable programmable memory (EEPROM), organised as 4 blocks of 256*8 bits.
The memory is compatible with the I²C standard, two wire serial interface which uses a bi-directional data bus and serial clock.
The memory carries a built-in 4 bit, unique device identification code (1010) corresponding to the I²C bus definition.
This is used together with 1 chip enable input (E) so that up to 2*8K devices may be attached to the I²C bus and selected individually.

15. CLASS AB STEREO HEADPHONE DRIVER TDA1308

The TDA1308 is an integrated class AB stereo headphone driver contained in a DIP8 plastic package.
The device is fabricated in a 1 mm CMOS process and has been primarily developed for portable digital audio applications.

16. SAW FILTERS

Saw filter type	:	Model:
G1965M	:	PAL-SECAM B/G MONO
G3962M	:	PAL-SECAM B/G GER&NIC STEREO, PAL I' NIC STEREO, INT-1
G1984	:	PAL-SECAM B/G GER&NIC STEREO INT-2
J1951M	:	PAL-I MONO
J3950M	:	PAL-I NIC STEREO
J1956M	:	PAL-I' MONO
K2955M	:	PAL-SECAM B/G-D/K MONO, PAL-SECAM B/G-D/K-I', MONO, PAL-SECAM B/G-D/K-L MONO
K2958M	:	PAL-SECAM B/G-D/K (38) MONO
K2962M	:	PAL-SECAM B/G-L/L' MONO
G3957M	:	PAL-SECAM B/G-L/L' GER&NIC BG/L STEREO
K6256K	:	PAL-SECAM B/G-D/K-I-L/L' MONO, PAL-SECAM B/G-D/K-I, L/L' GER&NIC BG/L STEREO, PAL-SECAM B/G-D/K-I-L/L' I, NICAM STEREO, PAL-SECAM B/G-D/K-I-L/L' GER&NIC I'-B/G-L, STEREO
K6259K	:	PAL-SECAM B/G-D/K-I-M/N (EURO) MONO
M1963M	:	PAL M/N MONO, NTSC M MONO, PAL M/N-NTSC M MONO

17. BTSC STEREO/SAP/DBX-DECODER and AUDIO PROCESSOR TDA9855

The TDA9855 is a BTSC stereo/SAP/dbx decoder and audio processor. It performs all functions to transform the composite baseband signal into the appropriate audio output signals to line out and to the loudspeaker output stages.

IC DESCRIPTIONS AND INTERNAL BLOCK DIAGRAM

- TDA8840/8842/8844
- TUNER (UV1315, UV1316, UV1336)
- TEA6415C
- TDA9830
- TDA2614/2615/2616Q
- TDA8351/8356
- TDA6107Q
- SAA4961
- MC44604
- SDA525X
- TDA9875
- TDA9818
- ST24C08
- TDA1308
- G1965M
- TDA9855

TDA8840/8842/8844:

The TDA884X is IıC-bus controlled single chip TV processor which is intended to be applied in PAL, NTSC, PAL/NTSC and multi-standard television receivers. These IC' s are nearly pin compatible with the TDA837X TV processors but have a higher degree of integration because the delay line (TDA4665 function) and the SECAM decoder have been integrated. In addition to these functions some additional features have been added like "Continuous Cathode Calibration" (2-point black current loop which results in an accurate biasing of the 3 guns), adjustable luminance delay time, blue stretching and dynamic skin tone control.

Features:

- Vision IF circuit with PLL demodulator
- Alignment-free multi-standard FM sound demodulator (4.5 MHz to 6.5 MHz)
- Audio switch
- Flexible source selection with CVBS switch and Y(CVBS)/C input so that a comb filter can be applied
- Integrated chrominance trap circuit
- Integrated luminance delay line
- Asymmetrical peaking in the luminance channel with a noise coring function
- Black stretching of non-standard CVBS or luminance signals
- Integrated chroma band-pass filter with switchable center frequency
- Blue stretch circuit which offsets colours near white towards blue
- RGB control circuit with "Continuous Cathode Calibration" and white point adjustment
- Linear RGB inputs and fast blanking
- Possibility to insert a "blue black" option when no video signal is available
- Horizontal synchronisation with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit
- Vertical driver optimised for DC-coupled vertical output stages
- IıC-bus control of various functions
- Low dissipation (850 mW)

Functional Differences between the 8840/8842/8844:

IC VERSION (TDA)	8840	8842	8844
Multi-standard IF		X	X
Automatic Volume Limiting	X	X	
PAL Decoder	X	X	X
SECAM Decoder		X	X
NTSC Decoder		X	X
Dynamic Skin Control			X
Colour Matrix PAL/NTSC (Japan)		X	X
Colour Matrix NTSC Japan/USA			
YUV interface			X
Base-band delay line	X	X	X
Adjustable luminance delay time			X
Horizontal geometry			X
Horizontal and vertical zoom			X
Vertical scroll			X

PINNING	PIN VALUE
1. Sound IF input	: 1mVrms
2. External audio input	: 500mVrms
3. IF demodulator tuned circuit 1	
4. IF demodulator tuned circuit 2	
5. IF-PLL loop filter	: Min:32-Max:60 MHz
6. IF video output	: 4.7V (Negative Modulation), 2V (Positive Modulation)
7. Serial clock input	: Low level max:1.5 V, High level min 3.5V
8. Serial data input/output	: Low level max:1.5 V, High level min 3.5V
9. Bandgap decoupling	
10. Chrominance input (S-VHS)	: 1Vpp, Max:1.4Vpp
11. External CVBS/Y input	: 1Vpp, Max:1.4Vpp
12. Main supply voltage 1	: 8V, Min:7.2V, Max:8.8V
13. Internal CVBS input	: 1Vpp, Max:1.4Vpp
14. Ground 1	
15. Audio output	: 700mVrms, Min:500mVrms, Max:900mVrms
16. SECAM PLL decoupling	
17. External CVBS input	: Vpp, Max:1.4Vpp
18. Black-current input	: Amplitude of “low” reference current : 8mA Amplitude of “high” reference current : 20mA
19. Blue output	: 2Vpp
20. Green output	: 2Vpp
21. Red output	: 2Vpp
22. Beam current limiter input/V-guard input	
23. Red input for insertion	: 0.7Vpp, Max:0.8Vpp
24. Green input for insertion	: 0.7Vpp, Max:0.8Vpp
25. Blue input for insertion	: 0.7Vpp, Max:0.8Vpp
26. RGB insertion input	: Max:0.3V
27. Luminance input	: 1.4Vpp
28. Luminance output	: 1.4Vpp
29. (B-Y) signal output	: 1.05Vpp
30. (R-Y) signal output	: 1.05Vpp
31. (B-Y) signal input	: 1.05Vpp
32. (R-Y) signal input	: 1.05Vpp
33. Subcarrier reference output	: 3.58/4.43 MHz
34. 3.58 MHz crystal connection	
35. 4.43/3.58 MHz crystal connection	
36. Loop filter phase detector	
37. 2nd supply voltage 1	: 8V, Min:7.2V, Max:8.8V
38. CVBS output	: 1Vpp, Max:1.4Vpp
39. Decoupling digital supply	: 1.8V
40. Horizontal output	: Max: 0.3V
41. Flyback input/sandcastle output	: Min:100ma, Max:300mA
42. Phase-2 filter	: 150 ms/ms
43. Phase-1 filter	: ±0.9 kHz, Max: ±1.2 kHz
44. Ground 2	
45. East-west drive output	
46. Vertical drive A output	: 0.95mA
47. Vertical drive B output	: 0.95mA
48. IF input 1	
49. IF input 2	
50. EHT/overvoltage protection input	: Min:1.2V, Max : 2.8V
51. Vertical sawtooth capacitor	: 3Vpp
52. Reference current input	: 3Vpp
53. AGC decoupling capacitor	
54. Tuner AGC output	: Max:9V (Maximum tuner AGC Output voltage), 300mV (Output saturation voltage)

55. Audio deemphasis : 500mVrms
56. Decoupling sound demodulator

UV1315, UV1316, UV1336

General description of UV1315:
The UV1315 tuner belongs to the UV 1300 familiy of tuners, which are designed to meet a wide range of applications.
It is a combined VHF, UHF tuner suitable for CCIR systems B/G, H, L, L', I and I'. The low IF output impedance has been designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

Features of UV1315:
- Member of the UV1300 family small sized UHF/VHF tuners
- Systems CCIR:B/G, H, L, L', I and I'; OIRT:D/K
- Voltage synthesized tuning (VST)
- Off-air channels, S-cable channels and Hyperband
- Standardized mechanical dimensions and pinning
- Compact size

PINNING **PIN VALUE**
1. Gain control voltage (AGC) : 4.0V, Max:4.5V
2. Tuning voltage
3. High band switch : 5V, Min:4.75V, Max:5.5V
4. Mid band switch : 5V, Min:4.75V, Max:5.5V
5. Low band switch : 5V, Min:4.75V, Max:5.5V
6. Supply voltage : 5V, Min:4.75V, Max:5.5V
7. Not connected
8. Not connected
9. Not connected
10. Symmetrical IF output 1
11. Symmetrical IF output 2

Bandswitching table:

	Pin 3	Pin 4	Pin 5
Low band	0V	0V	+5V
Mid band	0V	+5V	0V
High band	+5V	0V	0V

General description of UV1316:

The UV1316 tuner belongs to the UV 1300 family of tuners, which are designed to meet a wide range of applications.
It is a combined VHF, UHF tuner suitable for CCIR systems B/G, H, L, L', I and I'. The low IF output impedance has been designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

Features of UV1316:
- Member of the UV1300 family small sized UHF/VHF tuners
- Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
- Digitally controlled (PLL) tuning via IıC-bus
- Off-air channels, S-cable channels and Hyperband
- World standardized mechanical dimensions and world standard pinning
- Compact size
- Complies to "CENELEC EN55020" and "EN55013"

PINNING **PIN VALUE**
1. Gain control voltage (AGC) : 4.0V, Max:4.5V
2. Tuning voltage
3. I²C-bus address select : Max:5.5V
4. I²C-bus serial clock : Min:-0.3V, Max:5.5V
5. I²C-bus serial data : Min:-0.3V, Max:5.5V
6. Not connected
7. PLL supply voltage : 5.0V, Min:4.75V, Max:5.5V
8. ADC input
9. Tuner supply voltage : 33V, Min:30V, Max:35V
10. Symmetrical IF output 1
11. Symmetrical IF output 2

General description of UV1336:
UV1336 series is developed for reception of channels broadcast in accordance with the M, N standard. The tuning is available through built-in digitally controlled IıC bus (PLL).

Features of UV1336:
- Global standard pinning
- Integrated Mixer-Oscillator&PLL function
- Conforms to CISPR 13, FCC and DOC (Canada) regulations
- Low power consumption

- Both Phono connector and 'F' connector are available

PINNING	PIN VALUE
1. Gain control voltage	: 4.0V, Max:4.5V
2. Tuning voltage	
3. Address select	: Max:5.5V
4. Serial clock	: Min:-0.3V, Max:5.5V
5. Serial data	: Min:-0.3V, Max:5.5V
6. Not connected	
7. Supply voltage	: 5.0V, Min:4.75V, Max:5.5V
8. ADC input (optional)	
9. Tuning supply voltage	: 33V, Min:30V, Max:35V
10. Ground	
11. IF output	

TEA6415C:

General Description:

The main function of the TEA6415C is to switch 8 video input sources on the 6 outputs.
Each output can be switched to only one of the inputs whereas but any same input may be connected to several outputs.
All switching possibilities are controlled through the IıC-bus.

Features:

- 20 MHz Bandwith
- Cascadable with another TEA6415C (Internal address can be changed by pin 7 voltage)
- 8 inputs (CVBS, RGB, Mac, CHROMA, …)
- 6 Outputs
- Possibility of MAC or chroma signal for each input by switching-off the clamp with an external resistor bridge
- Bus controlled
- 6.5dB gain between any input and output
- -55dB crosstaljk at 5MHz
- Fully ESD protected

PINNING	PIN VALUE				
1. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
2. Data	: Low level	: -0.3V Max:1.5V, High level	: 3.0V	Max	: Vcc+0.5V
3. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
4. Clock	: Low level	: -0.3V Max:1.5V, High level	: 3.0V	Max	: Vcc+0.5V
5. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
6. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
7. Prog					
8. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
9. Vcc	: 12V				
10. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
11. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
12. Ground					
13. Output	: 5.5Vpp,	Min : 4.5Vpp			
14. Output	: 5.5Vpp,	Min : 4.5Vpp			
15. Output	: 5.5Vpp,	Min : 4.5Vpp			
16. Output	: 5.5Vpp,	Min : 4.5Vpp			
17. Output	: 5.5Vpp,	Min : 4.5Vpp			
18. Output	: 5.5Vpp,	Min : 4.5Vpp			
19. Ground					
20. Input	: Max : 2Vpp, Input Current		: 1mA,	Max	: 3mA

TDA9830:

General description:

The TDA9830, a monolithic integrated circuit, is designed for AM-sound demodulation used in L- and L'-standard.
The IC provides an audio source selector and also mute switch.

Features:

- Adjustment free wideband synchronous AM demodulator
- Audio source-mute switch (low noise)
- Audio level according EN50049
- 5 to 8V power supply or 12 V alternative
- Low power consumption

PINNING	PIN VALUE
1. Sound IF differential input signal	: Minimum IF input signal (between pins 1 and 16):60mV Max:100mV Maximum IF input signal (between pins 1 and 16) :120mV Min :70mV
2. Not connected	
3. AGC capacitor	
4. REF voltage filtering capacitor	
5. Not connected	

6. AM demodulator output : THD:0.8%, Max:2%; S/N:53dB, Min:47%; DC potential:2.15V, Min : 2.00V Max :2.30V
7. Input signal (from AM) to audio switch : Max:1.2V
8. Output signal from audio switch : 80dB, Min : 70dB
9. Input signal (from external) to audio switch : Max:1.2V
10. Switch input select control : Audio switching voltage to activate pin7 : Min :0V, Max :0.8V
Audio switching voltage to activate pin9 : Min:1.5V, Max :Vp
11. Supply voltage : 12V, Min:10.8V, Max:13.2V
12. Mute control : For Mute-ON Min : 0V, Max : 0.8V For Mute-OFF Min : 1.5V, Max : Vp
13. Ground
14. Supply voltage : 5V, Min : 4.5V, Max : 8.8V
15. Not connected
16. Sound IF differential input signal : Look at pin 1

TDA2614/TDA2615/TDA2616Q:

General Description of TDA2614:
The TDA2614 is a power amplifier in a 9-lead single-in-line (SIL9) plastic medium power package. It has been especially designed for mains fed applications.

Features:
- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING **PIN VALUE**
1. Not connected
2. Mute input : 300mA (For mute to activate)
3. Ground
4. Not connected
5. Supply voltage (negative) : -12VDC
6. Output : 6.9Vrms
7. Supply voltage (positive) : +12VDC
8. Inverting input (Ground) : 0V
9. Non-inverting input : 700mVrms, Min : 500mVrms, Max : 900mVrms

General Description of TDA2615:
The TDA2615 is a dual power amplifier in a 9-lead single-in-line (SIL9). It has been especially designed for mains fed applications.

Features:
- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Excellent gain balance of both amplifiers
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING **PIN VALUE**
1. Non-inverting input 1 : 700mVrms, Min :500mVrms, Max : 900mVrms
2. Mute input : 300mA (For mute to activate)
3. Ground
4. Output 1 : 6.9Vrms
5. Supply voltage (negative) : -12VDC
6. Output 2 : 6.9Vrms
7. Supply voltage (positive) : +12VDC
8. Inverting inputs 1 and 2 (Ground) : 0V
9. Non-inverting input 2 : 700mVrms, Min : 500mVrms, Max : 900mVrms

General Description of TDA2616Q:
The TDA2616Q is a dual power amplifier. It is supplied in a 9-lead SIL-bent-to DIL plastic power package (SOT157).
It has been especially designed for mains fed applications.

Features:
- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Excellent gain balance of both amplifiers
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING | **PIN VALUE**

1. Non-inverting input 1 : 700mVrms, Min : 500mVrms, Max : 900mVrms
2. Mute input : 300mA (For mute to activate)
3. Ground
4. Output 1 : 9.8Vrms
5. Supply voltage (negative) : -16VDC
6. Output 2 : 9.8Vrms
7. Supply voltage (positive) : +16VDC
8. Inverting inputs 1 and 2 (Ground) : 0V
9. Non-inverting input 2 : 700mVrms, Min : 500mVrms, Max : 900mVrms

TDA8351/8356:

General Description:

The TDA8356 is a power circuit for use in 90ø colour deflection system for field frequencies of 50 to 120 Hz. The circuit operates as a highly efficient class G system.
The TDA8351 is a power circuit for use in 110ø colour deflection system for field frequencies of 50 to 120 Hz. The circuit operates as a highly efficient class G system.

Features:

- Few external components
- Highly efficient fully DC-coupled vertical output bridge circuit
- Vertical flyback switch
- Guard circuit
- Protection against:
  - short-circuit of the output pins (7 and 4)
  - short-circuit of the output pins to Vp
- Temperature (thermal) protection
- High EMC immunity because of common mode inputs
- A guard signal in zoom mode

PINNING | **PIN VALUE**

1. Input power-stage (positive); includes Ii(sb) signal bias : 400mA, Min : 50mA, Max : 500mA
2. Input power-stage (negative); includes Ii(sb) signal bias :400mA, Min : 50mA, Max : 500mA
3. Operating supply voltage : +15VDC
4. Output voltage B : Max : 52V Output current : 2App (TDA8356) 3App (TDA8351)
5. Ground
6. Input flyback supply voltage : Min : Vp, Max : 50V
7. Output voltage A : Max : 52V Output current : 2App (TDA8356) 3App (TDA8351)
8. Guard output voltage : Max:5.5V (Io:100mA)
9. Input feedback voltage : Max:52V

TDA6107Q:

The TDA6107Q includes three video output amplifiers in a SIL 9 MP (Single In Line 9 pins Medium Power) package SOT111BE, using high-voltage DMOS technology, and is intended to drive the three cathodes of a colour picture tube.
In contrast to previous types of DMOS video amplifiers, all external resistors (Rf, Ri and Ra) are integrated, so the gain is fixed and it saves 9 resistors.
To obtain maximum performance, the amplifier should be used with black-current control and mounted on the CRT panel.

Features:

- Bandwith: 4.0 MHz typ at 100Vpp (Measured in appli,cation set-up, with Rfl=1K5 and Cl=Ctube+Cpcb=10pF)
- Slewrate: 950V/ms
- Fixed gain of 50 times
- No external components, only the well known supply decoupling
- Very simple application with a variety of colour decoders
- Black-current measurement output for automatic black current stabilization
- Only one supply voltage needed
- Internal protection against positive appearing CRT flash-over discharges
- Protection against ESD
- Internal reference voltage
- Thermal protection
- Controllable switch-off behaviour
- Very small PCB dimensions
- Very high replacement value

PINNING | **PIN VALUE**

1. Inverting input 1 : 2Vpp
2. Inverting input 2 : 2Vpp
3. Inverting input 3 : 2Vpp
4. Ground
5. BSC-output : Max:7V
6. Supply voltage : 200VDC
7. Cathode output 3 : 20mA, 100Vpp
8. Cathode output 2 : 20mA, 100Vpp

9. Cathode output 1 : 20mA, 100Vpp

SAA4961:

The SAA4961 is an adaptive alignment-free one chip comb filter compatible with both PAL and NTSC systems and provides high performance in Y/C separation.

Features:

- One chip adaptive multi-standard comb filter
- Time discrete but continuous amplitude signal processing with analogue interfaces
- Internal delay lines, filters, clock processing and signal switches
- Alignment-free
- No hanging dots or residual cross colour on vertical transients
- Few external components

It is possible to switch the comb filter into one of the following 3 modes:

1. Comb mode : In this mode, luminance and chrominance comb filter function are active. Chrominance output pin (pin 12) outputs comb filtered chrominance signal, luminance output pin (pin 14) outputs comb filtered luminance signal and CVBS output pin (pin 15) outputs delay compensated CVBS signal.

2. Comboff mode : In this mode, luminance comb filter function is turned off, but chrominance comb filter function operates. Chrominance output pin (pin 12) outputs comb filtered chrominance signal, luminance output pin (pin 14) outputs delay compensated CVBS signal and CVBS output pin (pin 15) outputs delay compensated CVBS signal.

3. Bypass mode : In this mode, no IC-function is active. Cext is bypassed to chrominance output pin (pin 12) and Yext/CVBS is bypassed to luminance output pin (pin 14) and CVBS output pin (pin 15).

PINNING	PIN VALUE
1. Subcarrier frequency input	: 200mVpp, Min : 100mVpp, Max : 400mVpp
2. Internal connected	
3. Bypass mode forcing	: HIGH level input voltage Min : 2.4VDC, Max : Vcc
4. Internal connected	
5. Decoupling capacitor	: 1.25VDC, Min : 1.1VDC, Max : 1.4VDC
6. Internal connected	
7. Analogue supply voltage	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
8. Analogue supply voltage output buffer	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
9. Analogue ground	
10. External chrominance input	: 0.7Vpp, Max : 1Vpp
11. Analogue ground output buffer	
12. Chrominance output signal	: 0mV, Min : -400mV, (DC offset voltage related to input) Max : +400mV BYPASS-mode:Co/Cext : 0dB, Min : -1dB, Max : +1dB
13. fsc reference selection	: HIGH level input voltage Min : 2V, Max : Vcc : Low level input voltage Min : 0V, Max : 0.8V
14. Luminance output signal	: 1Vpp, Min : 0.6Vpp, Max : 1.54Vpp
15. CVBS and Y output signal	: 1Vpp, Min : 0.6Vpp, Max : 1.54Vpp
16. Internal connected	
17. CVBS and Y input signal	: 1Vpp, Min : 0.7Vpp, Max : 1.4Vpp
18. Disable prefilter	: HIGH level input voltage Min : 2.0VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 0.8VDC
19. Storage Capacitor	: 2.5VDC, Min : 1.8VDC, Max : Vcc
20. Standard select 1	: HIGH level input voltage Min : 2.0VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 0.8VDC
21. Digital ground	
22. Digital supply voltage	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
23. Standard select 2	: HIGH level input voltage Min : 2.0VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 0.8VDC
24. Decoupling capacitor	: 1.25VDC, Min : 1.1VDC, Max : 1.4VDC
25. Controlling I/O pin	: HIGH level input voltage Min : 2.4VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 1.5VDC
26. Analogue ground PLL	
27. Analogue supply voltage PLL	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
28. Internal connected	

MC44604:

General description:

The MC44604 is an enhanced high performance controller that is specifically designed for off-line and DC-to-DC converter applications. It offers a really safe and reliable power management thanks particularly to its protection features (foldback, overvoltage detection, soft start, accurate demagnetization detection). Its high current totem pole output is also ideally suited for driving a power MOSFET, but can also be used for driving a bipolar transistor in low power converters. In addition to these features, the MC44604 offers an efficient stand-by mode.

Features:

Current Mode Controller

- Operation up to 250 kHz Output Switching Frequency
- Inherent Feed Forward Compensation
- Latching PWM for Cycle-by-Cycle Current Limiting
- Oscillator with Precise Frequency Control

High Flexibility

- Externally Programmable Reference Current
- Secondary or Primary Sensing
- High Current Totem Pole Output
- Undervoltage Lockout with Hysteresis

Safety/Protection Features

- Overvoltage Protection Facility against Open Loop
- Protection against Short Circuit on Oscillator Pin
- Fully Programmable Foldback
- Soft-Start Feature
- Accurate max Duty Cycle Setting
- Demagnetization (Zero Current Detection) Protection
- Internally Trimmed Reference

"Green Controller"

- Low Start-Up and Operating Current
- Patented Stand-by Pulsed Mode for low stand-by losses
- Low dV/dT for Low EMI radiations

PINNING	**PIN VALUE**
1. Output Supply Voltage (Vcc)	: 12VDC
2. Output Supply Voltage (Vc)	: 12VDC
3. Output voltage	: LOW Level Drop Voltage 1VDC, Max : 1.2VDC (Isink=100mA) 1.4VDC, Max : 2VDC (Isink=500mA) HIGH Level Drop Voltage 1.5VDC, Max : 2VDC (Isource=200mA) 2VDC, Max : 2.7VDC (Isource=500mA)
4. Ground	
5. Foldback input	: 0.9VDC, Min:-0.3VDC, Max : Vcc+0.3VDC
6. Overvoltage protection (OVP)	: 0.78VDC, Min:-0.3VDC, Max : Vcc+0.3VDC
7. Current sense input	: Min:-0.3VDC, Max : Vcc+0.3VDC
8. Demagnetization detection input	: Idemag-ib (source):-4mA Idemag-ib (sink) : 10mA
9. Standby current set	: Ipeak-stby/Iref : 0.40 Min : 0.37 Max : 0.43
10. Oscillator voltage swing	: 2Vpp
11. Soft start/Dmax/Voltage mode	: Idischarge : 5mA, Min : 1.5mA (Vsoft start=1V)
12. Clamp E/A input	: 4.7VDC, Min : 4.5VDC Max : 4.9VDC
13. E/A output	: HIGH State: 6.5VDC, Min : 5.5VDC, Max : 7.5VDC LOW State : 1.0VDC, 1.1VDC
14. E/A input	: 2.5VDC, Min : 2.4VDC, Max : 2.6VDC
15. Stand-by management	: Stand-by On Detection current ratio : Idet/Iref : 0.38, Min : 0.34, Max : 0.42 Stand-by regulation current ratio : Ireg/Iref : 20.5, Min : 18, Max : 23
16. Rref input	: 2.5VDC, Min : 2.4VDC, Max : 2.6VDC

SDA525X:

General description:

The SDA525X is designed for a low cost mono TV-set with analogue picture and sound control. IN SDA525X the following IC' s are used and supported:

Non-volatile memory	: SDA 2526 or SDA2546
PLL	: SDA 3202-3, SDA 3302
IR transmitter	: SDA 2208-3 or SDA 2218
IR preamplifier	: SFH 506-32

Features:

General:

- Display of program number, channel number, TV standard, analogue values, sleep timer, parental control, and mute is done by OSD
- Single LED for IR active, standby and on mode indication
- Local control (8 keys)
- IR remote control
- Control of volume, contrast, brightness, and saturation by analogue voltages
- Non-volatile memory for 50 or 100 programs, optimum analogue values and system parameters
- Individual delta volume for each program
- 1 control line to select external source
- 3 control lines for TV standard selection
- Automatic muting if no carrier detected
- Automatic switch-off when carrier disappears for more than 5 minutes
- Software protection against tube flashovers with internal watchdog timer
- Sleep timer
- Parental control
- IF 38 MHz or 38.9 MHz selectable

Tuning:

- Frequency synthesis tuning (62.5 kHz steps)
- 192 step fine tuning
- Channels corresponding to standards
- 100 programs selectable by directly entering a program number or by up/down function depending on the NVM size
- Channel selection by directly entering a channel number or by up/down function
- Channel search function in two directions

Sound:

- Mono sound control by analogue voltage

Service Mode:

- System configuration with service mode

PINNING	**PIN VALUE**	
1. Crystal selection output 1	LOW level	0V
	HIGH level	4.2V
2. Volume + switch input	LOW level	0V
	HIGH level	5V
3. Volume - switch input	LOW level	0V
	HIGH level	5V
4. Program - switch input	LOW level	0V
	HIGH level	5V
5. Program + switch input:	LOW level	0V
	HIGH level	5V
6. LED output	LOW level	0V
	HIGH level	4.2VDC
7. Filter (sound standard) selection output 1	LOW level	0V
	HIGH level	4.2V
8. Filter (sound standard) selection output 2	LOW level	0V
	HIGH level	4.2V
9. Mod-switch selection output	LOW level	0V
	HIGH level	4.2V
10. Ground		
11. Supply voltage	+5V	
12. 18 MHz crystal connection 1	2Vpp	
13. 18 MHz crystal connection 2	2Vpp	
14. L-ACC output	LOW level	0V
	HIGH level	3.6V
15. RESET output	LOW level	0V
	HIGH level	5V
16. Comb filter PAL/SECAM selection output	LOW level	0V
	HIGH level	5V
17. Tuning output	LOW level	0V
	HIGH level	3.4V
18. Audio switch transistor selection 1	LOW level	0V
	HIGH level	5V
19. Audio switch transistor selection 2	LOW level	0V
	HIGH level	5V
20. Audio switch transistor selection 3	LOW level	0V
	HIGH level	5V
21. Audio switch transistor selection 4	LOW level	0V
	HIGH level	5V
22. Comb filter standard selection 1	LOW level	0V
	HIGH level	5V
23. Comb filter standard selection 2	LOW level	0V
	HIGH level	5V
24. Analogue ground		
25. Filter 3		
26. Filter 2		
27. Filter 1		
28. Analogue supply voltage	5VDC	
29. Reference current input		
30. CVBS input	1Vpp	
31. Service output	LOW level	0V
	HIGH level	5V
32. AV2-status input	LOW level	0V
	HIGH level	5V
33. AV1-status input	LOW level	0V
	HIGH level	5V
34. AFC output	600mVpp	
35. Ground		
36. IR-input	LOW level	0V
	HIGH level	5V
37. Supply voltage	5V	
38. LC input	5Vpp	
39. LC output	5Vpp	
40. Mute output	LOW level	0V
	HIGH level	4.2V
41. St-by output	LOW level	0V
	HIGH level	1.4V
42. Clock signal output		
43. Data output		
44. Local connection	LOW	0V
	HIGH	5V
45. SAND input	4Vpp	
46. ODD/EVEN output	1.8V	
47. OSD-red output	LOW level	0V
	HIGH level	5V
48. OSD-green output	LOW level	0V
	HIGH level	5V
49. OSD-blue output	LOW level	0V
	HIGH level	5V
50. OSD-blanking output	LOW level	0Vh

		HIGH level : 5V
51. COR output	:	LOW level : 0V
		HIGH level : 5V
52. Crystal selection output 2	:	LOW level : 0V
		HIGH level : 4.2V

TDA9875:

General description:

The TDA9875 is a single-chip Digital TV Sound Processor (DTVSP) for analogue and digital multi-channel sound systems.

Features:

Demodulator and decoder section:

- Sound IF (SIF) input switch e.g. to select between terrestrial TV SIF and SAT SIF sources
- SIF AGC with 21dB control range
- SIF 8-bit Analogue-to-Digital Converter (ADC)
- DQPSK demodulation for different standards, simultaneously with 1-channel FM demodulation
- NICAM decoding (B/G, I and L standard)
- Two-carrier multistandard FM demodulation (B/G, D/K and M standard)
- Decoding for three analogue multi-channel systems (A2, A2+ and A2*) and satellite sound
- Optional AM demodulation for system L, simultaneously with NICAM
- Programmable identification (B/G, D/K and M standard) and different identification times

DSP section:

- Digital crossbar switch for all digital signal sources and destinations
- Control of volume, balance, contour, bass, treble, pseudo stereo, spatial, bass boost and soft-mute
- Plop-free volume control
- Automatic Volume Level (AVL) control
- Adaptive de-emphasis for satellite
- Programmable beeper
- Monitor selection for FM/AM DC values and signals, with peak detection option
- I²S-bus interface for a feature extension (e.g. Dolby surround) with matrix, level adjust and mute.

Analogue audio section:

- Analogue crossbar switch with inputs for mono and stereo, SCART 1 input/output, SCART2 input/output and line output
- User defined full-level/-3dB scaling for SCART outputs
- Output selection of mono, stereo, dual A/B, dual A or dual B
- 20 kHz bandwith for SCART-to-SCART copies
- Standby mode with functionality for SCART copies
- Dual audio digital-to-analogue converter from DSP to analogue crossbar switch, bandwith 15kHz
- Dual audio ADC from analogue inputs to DSP
- Two dual audio Digital-to-Analogue Converters (DACs) for loudspeakers (Main) and headphone (Auxiliary) outputs; also applicable for L, R, C and S in the Dolby Pro Logic mode with feature extension.

PINNING		PIN VALUE
1. NICAM clock output (728kHz)	:	LOW level input voltage : Max : 0.8V
		HIGH level input voltage : Min : 2.0V
2. Serial NICAM DATA output (728kHz)	:	LOW level input voltage : Max : 0.8V
		HIGH level input voltage : Min : 2.0V
3. First I²C-bus slave address modifier	:	LOW level input voltage : Max : 0.8V
		HIGH level input voltage : Min : 2.0V
4. SCL (I²C-bus clock)	:	LOW level input voltage : Max : 1.6V
		HIGH level input voltage : Min : 3.0V
5. SDA (I²C-bus data)	:	LOW level input voltage : Max : 0.8V
		HIGH level input voltage : Min : 2.0V
6. Analogue supply ground 1	:	0V
7. Analogue supply voltage 1	:	5V, Min : 4.75V, Max : 5.5V
8. Resistor for reference current generator	:	Iref : 220mA, Min : 170mA, Max : 260mA
9. First general purpose I/O pin		
10. Sound IF input 2	:	Min : 21Vrms, Max : 250mVrms
11. Reference voltage for demodulator part	:	Vdda1/Vssa1 : 50%, Min : 35%, Max : 65%
12. Sound IF input 1	:	Min : 21Vrms, Max : 250mVrms
13. Second I²C-bus slave address modifier	:	LOW level input voltage : Max : 0.8V
		HIGH level input voltage : Min : 2.0V
14. Digital supply ground 1	:	0V
15. Digital supply voltage 1	:	5V, Min : 4.75V, Max : 5.5V
16. Capacitor for power-on reset	:	LOW level input voltage : Max : 1.6V
		HIGH level input voltage : Min : 3.0V
17. Crystal oscillator output		
18. Crystal oscillator input		
19. Tuning voltage output for crystal oscillator		
20. Second general purpose I/O pin		
21. System clock output	:	LOW level input voltage : Max : 0.5V
		HIGH level input voltage : Min : 2.9V
22. I²S-bus clock	:	LOW level input voltage : Max : 0.8V
		HIGH level input voltage : Min : 2.0V
23. I²S-bus word select	:	LOW level input voltage : Max : 0.8V
		HIGH level input voltage : Min : 2.0V
24. I²S-bus data output 2	:	LOW level input voltage : Max : 0.8V
		HIGH level input voltage : Min : 2.0V
25. I²S-bus data output 1	:	LOW level input voltage : Max : 0.8V
		HIGH level input voltage : Min : 2.0V
26. I²S-bus data input 2	:	LOW level input voltage : Max : 0.8V
		HIGH level input voltage : Min : 2.0V

27. I²S-bus data input 1 : LOW level input voltage : Max : 0.8V
HIGH level input voltage : Min : 2.0V
28. First test pin; connected to ground for normal operation
29. Audio mono input : 500mVrms
30. Second test pin; connected to ground for normal operation
31. External audio input right channel : 350mVrms
32. External audio input left channel : 350mVrms
33. SCART 1 input right channel : 350mVrms
34. SCART 1 input left channel : 350mVrms
35. Ground guards
36. SCART 2 input right channel : 350mVrms
37. SCART 2 input left channel : 350mVrms
38. Analogue supply voltage 2 : 5V, Min : 4.75V, Max : 5.5V
39. Positive reference voltage
40. Reference voltage ground : 0V
41. Filter capacitor pin 1
42. Filter capacitor pin 2
43. Analogue supply ground 2 : 0V
44. Filter capacitor pin 2
45. Filter capacitor pin 1
46. Reference voltage 2 : Vdda2/Vssa2 : 50%
47. Scart 1 output right channel : 500mVrms
48. Scart 1 output left channel : 500mVrms
49. Digital supply ground 2 : 0V
50. Analogue supply ground 4 : 0V
51. Scart 2 output right channel : 500mVrms
52. Scart 2 output left channel : 500mVrms
53. Reference voltage 3 : Vdda3/Vssa3:50%
54. Post-filter capacitor pin right channel
55. Post-filter capacitor pin left channel
56. Analogue supply ground 3 : 0V
57. Headphone output right channel : Vo(clip) : Min : 1400mVrms
58. Headphone output left channel : Vo(clip) : Min : 1400mVrms
59. Analogue supply voltage 3 : 5.0V, Min : 4.75V, Max : 5.5V
60. Loudspeaker (main) output right channel : Vo(clip) : Min : 1400mVrms
61. Loudspeaker (main) output left channel : Vo(clip) : Min : 1400mVrms
62. Line output left channel : 500mVrms
63. Line output right channel : 500mVrms
64. Digital supply voltage 2 : 5.0V, Min : 4.75V, Max : 5.5V

TDA9818:

General description:
The TDA9818 is an integrated circuit for multistandard vision IF signal processing, sound AM and FM demodulation.

Features:

- 5 V supply voltage
- Applicable for IF frequencies of 38.9 MHz, 45.75 MHz and 58.75 MHz
- Gain controlled wide band VIF-amplifier (AC-coupled)
- True synchronous demodulation with active carrier regeneration (very linear demodulation, good intermodulation figures, reduced harmonics, excellent pulse response)
- Robustness for overmodulation better than 105% due to gated phase detector at L/L accent standard and PLL-bandwidth control at negative modulated standards
- VCO frequency switchable between L and L accent (alignment external) picture carrier frequency
- VIF AGC detector for gain control, operating as peak sync detector for B/G, peak white detector for L; signal controlled reaction time for L
- Tuner AGC with adjustable takeover point (TOP)
- AFC detector without extra reference circuit
- AC-coupled limiter amplifier for sound intercarrier signal
- Alignment-free FM-PLL demodulator with high linearity
- SIF input for single reference QSS mode (PLL controlled); SIF AGC detector for gain controlled SIF amplifier; single reference QSS mixer able to operate in high performance single reference QSS mode and in intercarrier mode
- AM demodulator without extra reference circuit
- Stabilizer circuit for ripple rejection and to achieve constant output signals
- ESD protection for all pins

PINNING **PIN VALUE**

1. VIF differential input signal voltage 1 : Input signal voltage sensitivity
60mVrms, Max:100mVrms
2. VIF differential input signal voltage 2 : Input signal voltage sensitivity
60mVrms, Max:100mVrms
3. Standard switch : Min : 2.8V, Max : Vp
4. VIF AGC capacitor : **Charging current** : 1mA, Min : 0.75mA, Max : 1.25mA
Discharging current : B/G standard : 20mA, Min : 15mA, Max:25mA
Normal mode L : 300nA, Min : 225nA, Max : 375nA
Fast mode L : 40mA, Min : 30mA, Max : 50mA
5. SIF AGC capacitor : **Charging current** : FM mode : 12mA, Min : 8mA, Max : 16mA
AM mode : 1.2mA, Min : 0.8mA, Max : 1.6mA
Discharging current : FM mode : 12mA, Min : 8mA, Max : 16mA
Normal mode AM : 1.4mA, Min : 1mA, Max : 1.8mA
Fast mode AM : 85mA, Min : 60mA, Max : 110mA
6. PLL loop filter : Min : 0V, Max : Vp
7. L/L accent switch and adjust : Min : 0V, Max : Vp

8. Audio output : Rx : 470ohm : 250mVrms, Min : 200mVrms, Max : 300mVrms
Rx : 0ohm : 500mVrms, Min : 400mVrms, Max : 600mVrms
9. De-emphasis input : Min : 0V, Max : Vp
10. De-emphasis output : Min : 0V, Max : Vp
11. Decoupling capacitor : Min : 0V, Max : Vp
12. Single reference QSS/intercarrier output voltage : 140mVrms, Min : 100mVrms Max: 180mVrms
13. Sound intercarrier input voltage : Input signal voltage for lock-in: Max : 100mVrms
Input signal voltage : 250mVrms
14. Tuner AGC output : IF input signal voltage for minimum starting point of tuner takeover 2mV, Max : 5mV
IF input signal voltage for maximum starting point of tuner takeover 100mV, Min : 50mV
15. Black level detector : Min : 0V, Max : Vp
16. Composite video output voltage : 1.1Vpp, Min : 0.97Vpp, Max : 1.23Vpp
17. AFC output : Upper limit : Vp-0.3V, Min : Vp-0.6V, Lower limit : 0.3V, Max : 0.6V
18. VCO1 resonance circuit
19. VCO2 resonance circuit
20. Ground : 0V
21. Supply voltage : 5V, Min : 4.5V, Max : 5.5V
22. Tuner AGC takeover adjust (TOP)
23. SIF differential input signal voltage 1 : Input signal voltage sensitivity 50mVrms, Max : 100mVrms
24. SIF differential input signal voltage 2 : Input signal voltage sensitivity 50mVrms, Max : 100mVrms

ST24C08:

General description:
The ST24C08 is a 8Kbit electrically erasable programmable memory (EEPROM), organized as 4 blocks of 256 * 8 bits. The memory operates with a power supply value as low as 2.5V. Both Plastic Dual-in-Line and Plastic Small Outline packages are available.

Features:
- Minimum 1 million ERASE/WRITE cycles with over 10 years data retention
- Single supply voltage:4.5 to 5.5V
- Two wire serial interface, fully IıC-bus compatible
- Byte and Multibyte write (up to 8 bytes)
- Page write (up to 16 bytes)
- Byte, random and sequential read modes
- Self timed programming cycle

PINNING		PIN VALUE
1. Write protect enable (Ground)	:	0V
2. Not connected (Ground)	:	0V
3. Chip enable input (Ground)	:	0V
4. Ground	:	0V
5. Serial data address input/output	:	Input LOW voltage : Min : -0.3V, Max : 0.3*Vcc Input HIGH voltage: Min : 0.7*Vcc, Max : Vcc+1
6. Serial clock	:	Input LOW voltage : Min: -0.3V, Max : 0.3*Vcc Input HIGH voltage: Min : 0.7*Vcc, Max : Vcc+1
7. Multibyte/Page write mode	:	Input LOW voltage : Min: -0.3V, Max :0.5V Input HIGH voltage: Min : Vcc-0.5, Max : Vcc+1
8. Supply voltage	:	Min : 2.5V, Max : 5.5V

TDA1308:

Features:
- Wide temperature range
- No switch ON/OFF clicks
- Excellent power supply ripple rejection
- Low power consumption
- Short-circuit resistant
- High performance
  - high signal-to-noise ratio
  - high slew rate
  - low distortion
- Large output voltage swing

PINNING		PIN VALUE
1. Output A (Voltage swing)	:	Min : 0.75V, Max : 4.25V
2. Inverting input A	:	Vo(clip) : Min : 1400mVrms
3. Non-inverting input A	:	2.5V
4. Ground	:	0V
5. Non-inverting input B	:	2.5V
6. Inverting input B	:	Vo(clip) : Min : 1400mVrms
7. Output B (Voltage swing)	:	Min : 0.75V, Max : 4.25V
8. Positive supply	:	5V, Min : 3.0V, Max : 7.0V

G1965M:

Features:
- TV IF filter with Nyquist slope and sound shelf at typ. 20.4dB
- High colour carrier level at typ. 1.0dB
- Constant group delay

TDA9855

General description:

The TDA9855 is a bipolar-integrated BTSC stereo/SAP decoder with hi-fi audio processor (IıC-bus controlled) for application in TV sets.

Features:

- Quasi alignment-free BTSC stereo decoder due to auto adjustment of channel separation via IıC-bus
- High integration level with automatically tuned integrated filters
- Input level adjustment IıC-bus controlled
- Alignment-free Sap processing
- dbx noise reduction circuit
- Audio processor
  - -Selector for internal and external signals (line in)
  - -Automatic volume level control
  - -Subwoofer or surround output with separate volume control
  - -Volume control
  - -Special loudness characteristic automatically controlled in combination with volume setting
  - -Bass and treble control
  - -Audio signal zero crossing detection between any volume step switching
  - -Mute control at audio signal zero crossing
  - -IıC-bus tranceiver.

PINNING	PIN VALUE
1. Treble control capacitor, left channel	
2. Bass control capacitor, left channel	
3. Bass control capacitor, left channel	
4. Not connected	
5. Programmable address bit (module address)	
6. Output, left channel	: 500mVrms, Min : 480mVrms, Max : 520mVrms
7. Input loudness, left channel	
8. Input volume control, left channel	: 2.15Vrms, Min : 2Vrms
9. Output effects, left channel	
10. Automatic volume control capacitor	
11. Reference voltage 0.5Vcc	: 4VDC
12. Line input, left channel	: 2.3Vrms, Min : 2Vrms
13. Input automatic volume control, left channel	: Min : 2Vrms
14. Output selector, left channel	
15. Line output, left channel	: 500mVrms
16. Capacitor timing wideband for dbx	
17. Capacitor timing spectral for dbx	
18. Capacitor wideband for dbx	
19. Capacitor spectral for dbx	
20. Variable emphasis out for dbx	
21. Variable emphasis in for dbx	
22. Capacitor noise reduction for dbx	
23. Capacitor mute for SAP	
24. Capacitor DC decoupling for SAP	
25. Common ground	: 0V
26. Serial data input/output	: High level input voltage: Min : 3VDC, Max : Vcc Low level input voltage: Min : -0.3VDC, Max : 1.5VDC Low level output voltage : Max : 0.4VDC
27. Serial clock input	: High level input voltage: Min : 3VDC, Max : Vcc Low level input voltage : Min : -0.3VDC, Max : 1.5VDC Low level output voltage : Max : 0.4VDC
28. Supply voltage	: 8VDC
29. Input composite signal	: 250mVrms
30. Capacitor for electronic filtering of supply	
31. Capacitor for pilot detector	
32. Capacitor for pilot detector	
33. Capacitor for phase detector	
34. Capacitor for filter adjust	
35. Ceramic resonator	
36. Capacitor DC decoupling mono	
37. Capacitor DC decoupling stereo/SAP	
38. Line output, right channel	: 500mVrms
39. Output selector, right channel	
40. Input automatic volume control, right channel	: Min:2Vrms
41. Line input, right channel	: 2.3Vrms, Min : 2Vrms
42. Capacitor 2 pseudo function	
43. Capacitor 1 pseudo function	
44. Output effects, right channel	
45. Input volume control, right channel	: Min : 2Vrms
46. Input loudness, right channel	
47. Output, right channel	: 500mVrms, Min : 480mVrms, Max : 520mVrms
48. Not connected	
49. Filter capacitor for subwoofer	
50. Bass control capacitor, right channel	
51. Bass control capacitor, right channel	
52. Treble control capacitor	

■ Insertion attenuation typ. 15.0dB

PINNING

1. Input
2. Input-ground
3. Chip carrier-ground

AK19 CHASSIS MANUAL ADJUSTMENTS PROCEDURE

In order to enter the service menu, first enter the installation menu and then press the digits 4, 7, 2 and 5 respectively.

For ADJUST settings:

Select **Adjust** using ▽or△ button and press ▷or◁ button to enter it. To select different adjust parameters, use ▽or△ button. To change the selected parameter, use ▷ or ◁ button.

WHITE BALANCE ADJUSTMENT:

The following three parameters are used to make white balance adjustment. To do this, use a Colour Analyser. Using white point RED, white point GREEN and white point BLUE parameters, insert the + sign in the square which is in the middle of the screen.

ADJUST 00 = White Point RED
ADJUST 01 = White Point GREEN
ADJUST 02 = White Point BLUE

AGC ADJUSTMENT:

In order to do AGC adjustment, enter a 60dBmV RF signal level from channel C-12.
Connect a digital voltmeter to pin 1 of the tuner. Change the AGC parameter until you see 3.70VDC on voltmeter display. Check that picture is normal at 90dBmV signal level.
ADJUST 03 = AGC

IF-PLL NEGATIVE ADJUSTMENT (Only with PLL tuner):

Connect 38.9 MHz test pattern for PAL B/G, PAL-SECAM B/G, 39.5 MHz test pattern for PAL I or 45.75 MHz test pattern for PAL M/N, NTSC M model to Z401 SAW filter input terminals. Change the IF-PLL Negative parameter until you see IN, DOWN below. If you cannot catch IN, DOWN position this way, using a screwdriver rotate the VIF-COIL LT401 left or right until you see IN, DOWN.
ADJUST 04 = IF-PLL Negative

IF-PLL POSITIVE ADJUSTMENT (Only with PLL tuner):

Connect 33.9 MHz test pattern for SECAM L' model to Z401 SAW filter input terminals. Change the IF-PLL Positive parameter until you see IN, DOWN below. If you cannot catch IN, DOWN position this way, using a screwdriver rotate the VIF-COIL LT401 left or right until you see IN, DOWN.
ADJUST 05 = IF-PLL Positive

LUMINANCE DELAY ADJUSTMENT (with only TDA 8844 video processor):

ADJUST 06 = Y-Delay PAL
Enter a PAL B/G colour and black-white bar test pattern via RF. Adjust Y-Delay PAL till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.
Note: If the SAW filter is one of the G1965M, J1951M, J3950M, K2958M, K2962M, G3957M, K6256K, K6259K or M1963M, there is constant group delay distortion, so for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.
ADJUST 07 = Y-Delay SECAM
Enter a SECAM B/G colour and black-white bar test pattern via RF. Adjust Y-Delay SECAM till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.
Note: If the SAW filter is one of the G1965M, K2958M, K2962M, G3957M, K6256K or K6259K, there is constant group delay distortion, so for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.
ADJUST 08 = Y-Delay NTSC
Enter an NTSC colour and black-white bar test pattern via RF. Adjust Y-Delay NTSC till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.
Note: If the SAW filter is M1963M, there is constant group delay distortion, so for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.
ADJUST 09 = Y-Delay Other
In case of other colour systems, enter this system with colour and black-white bar test pattern via RF. Adjust Y-Delay Other till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible. Normally for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.

VERTICAL ZOOM ADJUSTMENT (only for 110ø picture tubes):

ADJUST 10 = Vertical Zoom
Enter a PAL B/G circle test pattern via RF. Change vertical zoom till you see the upper and lower limit of the circle as close to the upper and lower limit of the picture tube as possible.

VERTICAL SCROLL ADJUSTMENT (only for 110ø picture tubes):

ADJUST 11 = Vertical Scroll
Enter a PAL B/G circle test pattern via RF. Change vertical scroll till you see the circle exactly in the middle of the screen.

4:3 HORIZONTAL SHIFT ADJUSTMENT:

ADJUST 12 = 4 : 3 Horizontal Shift
Enter a RED PURITY test pattern via RF.Change horizontal shift till the picture is horizontally centred. Check whether this adjustment is correct after completing Service Mode Adjustment.

4:3 VERTICAL SLOPE ADJUSTMENT:
ADJUST 13 = 4 : 3 Vertical Slope
Enter a CROSS-HATCH B/G test pattern via RF. Change vertical slope till the size of squares on both the upper and lower part of test pattern become equal to the squares laying on the vertical centre of the test pattern. Check and readjust VERTICAL SLOPE item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 VERTICAL AMPLITUDE ADJUSTMENT:
ADJUST 14 = 4 : 3 Vertical Amplitude
Enter a PAL B/G test pattern via RF. Change vertical slope till horizontal black lines on both the upper and lower part of the test pattern become very close to the upper and lower horizontal sides of picture tube and nearly about to disappear. Check and readjust VERTICAL AMPLITUDE item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 S-CORRECTION ADJUSTMENT:
ADJUST 15 = 4 : 3 S-Correction
Enter a PAL B/G circle test pattern via RF. Change S-correction till the middle part of the circle is as round as possible.

4:3 VERTICAL SHIFT ADJUSTMENT:
ADJUST 16 = 4 : 3 Vertical Shift
Enter a PAL B/G test pattern via RF. Change Vertical Shift till the test pattern is vertically centred, i.e. horizontal line at the centre pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust Vertical Shift item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 EW WIDTH ADJUSTMENT (only for 110ø picture tubes):
ADJUST 17 = 4 : 3 EW Width
Enter a PAL B/G test pattern via RF. Change EW Width till the vertical black and white bars on both left and right side of the pattern exactly disappear.

4:3 EW PARABOLA WIDTH ADJUSTMENT (only for 110ø picture tubes):
ADJUST 18 = 4 : 3 EW Parabola Width
Enter a PAL B/G test pattern via RF. Change EW Parabola Width till vertical lines close to the both sides of the picture frame become parallel to vertical sides of picture tube. Check and readjust EW Parabola Width item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 EW CORNER PARABOLA ADJUSTMENT (only for 110ø picture tubes):
ADJUST 19 = 4 : 3 EW Corner Parabola
Enter a PAL B/G test pattern via RF. Change EW Corner Parabola till vertical lines at the corners of both sides of picture frame become vertical and parallel to vertical corner sides of picture tube. Check and readjust EW Corner Parabola item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 EW TRAPEZIUM ADJUSTMENT (only for 110ø picture tubes):
ADJUST 20 = 4 : 3 EW Trapezium
Enter a PAL B/G test pattern via RF. Change EW Trapezium till vertical lines, especially lines at the sides of the picture frame became parallel to the both sides of picture tube as close as possible. Check and readjust EW Trapezium item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 HORIZONTAL SHIFT ADJUSTMENT:
ADJUST 21 = 16 : 9 Horizontal Shift
Enter a RED PURITY test pattern via RF.Change horizontal shift till the picture is horizontally centred. Check whether this adjustment is correct after completing Service Mode Adjustment.

16:9 VERTICAL SLOPE ADJUSTMENT:
ADJUST 22 = 16 : 9 Vertical Slope
Enter a CROSS-HATCH B/G test pattern via RF. Change vertical slope till the size of squares on both the upper and lower part of test pattern become equal to the squares laying on the vertical centre of the test pattern. Check and readjust VERTICAL SLOPE item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 VERTICAL AMPLITUDE ADJUSTMENT:
ADJUST 23 = 16 : 9 Vertical Amplitude
Enter a PAL B/G test pattern via RF. Change vertical slope till horizontal black lines on both the upper and lower part of the test pattern become very close to the upper and lower horizontal sides of picture tube and nearly about to disappear. Check and readjust VERTICAL AMPLITUDE item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 S-CORRECTION ADJUSTMENT:
ADJUST 24 = 16 : 9 S-Correction
Enter a PAL B/G circle test pattern via RF. Change S-correction till the middle part of the circle is as round as possible.

16:9 VERTICAL SHIFT ADJUSTMENT:
ADJUST 25 = 16 : 9 Vertical Shift
Enter a PAL B/G test pattern via RF. Change Vertical Shift till the test pattern is vertically centred, i.e. horizontal line at the centre pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust Vertical Shift item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 EW WIDTH ADJUSTMENT (only for 110ø picture tubes):
ADJUST 26 = 16 : 9 EW Width
Enter a PAL B/G test pattern via RF. Change EW Width till the vertical black and white bars on both left and right side of the pattern exactly disappear.

16:9 EW PARABOLA WIDTH ADJUSTMENT (only for 110ø picture tubes):

ADJUST 27 = 16 : 9 EW Parabola Width
Enter a PAL B/G test pattern via RF. Change EW Parabola Width till vertical lines close to the both sides of the picture frame become parallel to vertical sides of picture tube. Check and readjust EW Parabola Width item if the adjustment becomes improper after some other geometric adjustments are done.

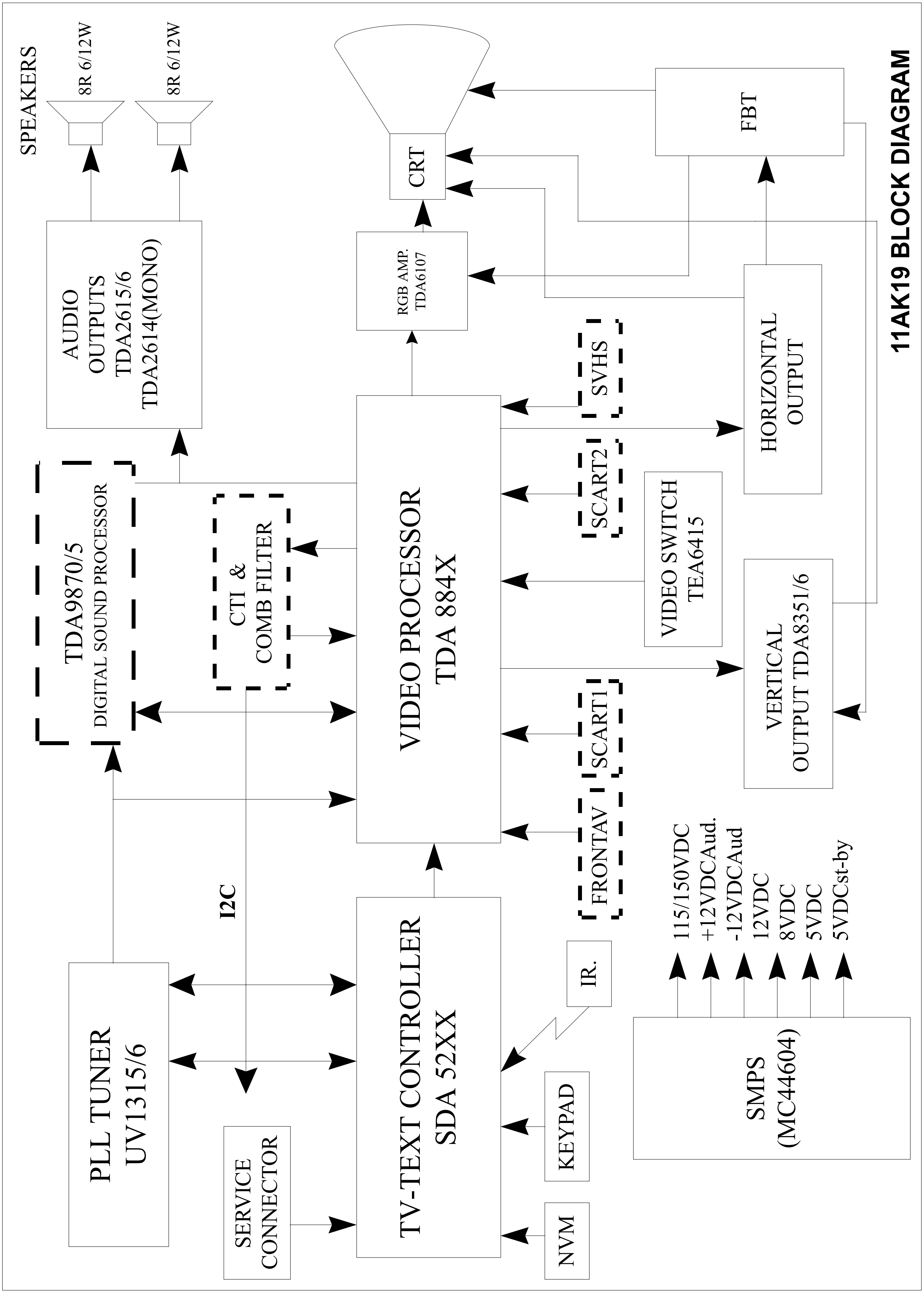
16:9 EW CORNER PARABOLA ADJUSTMENT (only for 110ø picture tubes):
ADJUST 28 = 16 : 9 EW Corner Parabola
Enter a PAL B/G test pattern via RF. Change EW Corner Parabola till vertical lines at the corners of both sides of picture frame become vertical and parallel to vertical corner sides of picture tube. Check and readjust EW Corner Parabola item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 EW TRAPEZIUM ADJUSTMENT (**only for 110ø picture tubes):**
ADJUST 29 = 16 : 9 EW Trapezium
Enter a PAL B/G test pattern via RF. Change EW Trapezium till vertical lines, especially lines at the sides of the picture frame became parallel to the both sides of picture tube as close as possible. Check and readjust EW Trapezium item if the adjustment becomes improper after some other geometric adjustments are done.
For OPTION settings:

Select **OPTION** using or button and press or button to enter it. To select different option bytes, use or button. Using or button select the bit you want to set and then set it pressing 0 or 1 button.

INDEX TABLE

GENERAL BLOCK DIAGRAM OF CHASSIS AK19



Index Table

Option 0.

B7:	Ina	=	x
B6:	Inb	=	x
B5:	Inc	=	x
B4:	Akb	=	0
B3:	Foa	=	x
B2:	Fob	=	x
B1:	Xa	=	note1
B0:	Xb	=	note1

note 1:

Xa,Xb

0,1 : Pal M, Pal N, Ntsc M

Pin 34 : 3.58 (1, 2 or 3 crystals)
Pin 35 : No crystal

1,0 : Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L’, Secam K1

Pin 34 : No crystal
Pin 35 : 4.43 (1 crystal)

1,1 : Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L’, Secam K1, Pal M, Pal N, Ntsc M

Pin 34 : 3.58 (1, 2 or 3 crystals)
Pin 35 : 4.43 (1 crystal)

Option 1.

B7:	Frf	=	1
B6:	Frs	=	1
B5:	Dl	=	x
B4:	Stb	=	1
B3:	Poc	=	x
B2:	Cm2	=	x
B1:	Cm1	=	x
B0:	Cm0	=	x

Option 2.

B7:	Oso	=	0
B6:	Vsd	=	0
B5:	Cb	=	0
B4:	Bls	=	0
B3:	Bks	=	0
B2:	Ie1	=	x
B1:	Afw	=	x
B0:	Bb	=	0

Option 3.

B7:	Hob	=	note 1
B6:	Bps	=	0
B5:	Acl	=	x
B4:	Cmb	=	note 2
B3:	Ast	=	x
B2:	Cl2	=	1
B1:	Cl1	=	0
B0:	Cl0	=	0

note 1:

0	=	Pal+ helper output blanking disabled
1	=	Pal+ helper output blanking enabled

note 2:

0	=	Comb filter disabled
1	=	Comb filter enabled

Option 4.

B7:	Ifs	=	x
B6:	Mod	=	x
B5:	Vsw	=	x
B4:	Sm	=	x
B3:	Ds	=	0
B2:	Dsa	=	0
B1:	Fav	=	0
B0:	Lfa	=	x

Option 5. CTI Available

B7:	Avl	=	0
B6:	Hbl	=	x
B5:	Vim	=	x
B4:	Gai	=	note 1
B3:	Nci	=	x
B2:	Stm	=	x
B1:	Vid	=	x
B0:	Lbm	=	0

note 1:

0	=	CTI disabled
1	=	CTI available

Option 6.

B7:	Hco	=	x
B6:	Evg	=	1
B5:	Sbl	=	1
B4:	Prd	=	x
B3:	Mat	=	note 1
B2:	Rbl	=	x
B1:	Cor	=	x
B0:	Aen	=	note 2

note 1:

0	=	If only PAL
1	=	Else

note 2:

0	=	APS diasbled >> Preset
1	=	APS enabled >> APS

Option 7. Country Value, PLL_VST, PIP Zoom Mode, PIP Position

B7:	C3	=	note 1
B6:	C2	=	note 1
B5:	C1	=	note 1
B4:	C0	=	note 1
B3:	P/V	=	note 2
B2:	PZM	=	note 3
B1:	PP1	=	note 4
B0:	PP0	=	note 4

note 1:

C3,C2,C1,C0 = Country

0,0,0,0	=	?	Not allowed
0,0,0,1	=	D	Germany
0,0,1,0	=	A	Austria
0,0,1,1	=	CH	Switzerland
0,1,0,0	=	I	Italy
0,1,0,1	=	F	France
0,1,1,0	=	B	Belgium
0,1,1,1	=	DK	Denmark
1,0,0,0	=	S	Sweden
1,0,0,1	=	N	Norway
1,0,1,0	=	SF	Finland
1,0,1,1	=	GB	Great Britain
1,1,0,0	=	NL	Netherlands
1,1,0,1	=	P	Portugal
1,1,1,0	=	E	Spain
1,1,1,1	=	TR	Turkey

note 2:

1	=	VST Tuner
0:	=	PLL Tuner

note 3:

PZM

1:	=	16 : 9
0:	=	4:3

note 4:

PP1, PP0

00:	=	LEFT-TOP
01:	=	LEFT BOTTOM
10:	=	RIGHT-BOTTOM
11:	=	RIGHT-TOP

Option 8. Tube Size, Default Zoom mode, IF Frequency

B7:	Tub	=	note 1
B6:	Z.Def	=	note 2
B5:	IfD	=	note 3
B4:	IfI	=	note 4
B3:	IfM	=	note 5
B2:	Aps	=	note 6
B1:	Hp	=	note 7
B0:	Hue	=	note 8

note 1:

Tub

0	=	16:9 Tube size
1	=	4:3 Tube size

note 2:

Z.Def

0	=	16:9 mode default
1	=	4:3 mode default

note 3:

IfI

0	=	IF I 39.5 MHz	Great Britain I	, Only UHF Tuner
1	=	IF I 38.9 MHz	Ireland I+	, Standard Tuner

note 4:

IfD

0	=	IF DK 38.0 MHz
1	=	IF DK 38.9 MHz

note 5:

IfM

0	=	IF M,N 45.75 MHz	S&N American Models	, Tuner UV1336	(Only Pal M/N, Ntsc M)
1	=	IF M,N 38.9 MHz	Euro M,N Models	, Standard Tuner	

Note 6:

Aps (Only for PLL)

0	=	A.P.S. done
1	=	A.P.S. set

note 7:

Hp

0	=	No headphone
1	=	Headphone available

note 8:

Hue

0	=	No hue
1	=	Hue available

Option 9. Standard Available

B7:	NM	=	note 1
B6:	PN	=	note 1
B5:	PM	=	note 1
B4:	K1	=	note 1
B3:	L	=	note 1
B2:	I	=	note 1
B1:	DK	=	note 1
B0:	BG	=	note 1

note 1:

0	=	Standard not supported
1	=	Standard available

Option 10. Scart , Combfilter, Teletext Language

B7:	TXL2	=	note 1
B6:	TXL1	=	note 1
B5:	TXL0	=	note 1
B4:	Com	=	note 2
B3:	Svh	=	note 3
B2:	Fro	=	note 4
B1:	Sc2	=	note 5
B0:	Sc1	=	note 6

note 1:

TXL2,TXL1,TXL0:

000	=	WEST, {ENGLISH}, {FRENCH}, {SCAND }, {CZECH }, {GERMAN}, {SPANISH}, {ITALIAN}, {ENGLISH }
001	=	WEST-EAST{POLISH }, {FRENCH}, {SCAND }, {CZECH }, {GERMAN}, {SERBIAN}, {ITALIAN}, {RUMANIAN}
010	=	WEST-TR{ENGLISH}, {FRENCH}, {SCAND }, {TURKISH}, {GERMAN}, {SPANISH}, {ITALIAN}, {GREEK }
011	=	EAST (Cyrillic) {ENGLISH}, {RUSSIAN},{HUNGARIAN},{CZECH }, {GERMAN},{UKRAINIAN},{LETTISH}, {RUMANIAN}
100	=	ARABIC{ENGLISH}, {FRENCH} ,{ENGLISH }, {ENGLISH}, {ENGLISH},{HEBREW}, {ENGLISH}, {ARABIC }
101	=	--
110	=	--
111	=	--

note 2:

0	=	Comb filter not supported
1	=	Comb filter available

note 3:

0	=	S-VHS not supported
1	=	S-VHS available

note 4:

0	=	Front/Back AV (AV-3) not supported
1	=	Front/Back AV (AV-3) available

note 5:

0	=	Scart 2 not supported
1	=	Scart 2 available

note 6:

0	=	Scart 1 not supported
1	=	Scart 1 available

Option 11. Pll tuner control 1 byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 1 byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	0	1	1	1	0
Alps	TELE9X062A	1	0	0	0	1	1	1	0
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0
Siel	PT060	1	0	0	0	1	1	1	0
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0
Thomson	CTT5020	1	0	0	0	1	1	1	0

Option 12. Pll tuner control 2 low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 low byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	1	0	0	0	0	1
Alps	TELE9X062A	0	0	0	0	0	0	0	1
Samsung	TEXX2949PG28A	0	0	0	0	0	0	0	1
Siel	PT060	0	1	1	0	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	1	0
Thomson	CTT5020	0	0	0	0	0	0	1	1

Option 13. Pll tuner control 2 mid byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 mid byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	1	0	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	1	0
Samsung	TEXX2949PG28A	0	0	0	0	0	0	1	0
Siel	PT060	0	1	0	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0
Thomson	CTT5020	0	0	0	0	0	1	1	0

Option 14. Pll tuner control 2 high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 high byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	0	0	1	1	0	1	0	0
Alps	TELE9X062A	0	0	0	0	1	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0
Siel	PT060	0	0	1	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	1	0	0	0	0	1	0	1

Option 15. Pll tuner VHF LOW - VHF HIGH crossover low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF LOW - VHF HIGH crossover low byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 0 1 0 1 0	(0A hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 0 1 0 0 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	1 0 1 0 1 0 1 0	(AA hex)

Option 16. Pll tuner VHF LOW - VHF HIGH crossover high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF LOW - VHF HIGH crossover high byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 0 1 1 0 0	(0C hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 0 1 1 0 1	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	0 0 0 0 1 0 0 1	(09 hex)

Option 17. Pll tuner VHF HIGH - UHF crossover low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF HIGH - UHF crossover low byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	1 1 1 0 0 0 1 0	(E2 hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	1 0 1 0 0 0 1 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	1 0 1 0 0 0 1 0	(A2 hex)

Option 18. Pll tuner VHF HIGH - UHF crossover high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF HIGH - UHF crossover high byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 1 1 1 1 0	(1D hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 1 1 1 1 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	0 0 0 1 1 0 1 1	(1B hex)

Option 19. PIP Pll tuner control 1 byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 1 byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	0	1	1	1	0
Alps	TELE9X062A	1	0	0	0	1	1	1	0
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0
Siel	PT060	1	0	0	0	1	1	1	0
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0
Thomson	CTT5020	1	0	0	0	1	1	1	0

Option 20. PIP Pll tuner control 2 low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 low byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	1	0	0	0	0	1
Alps	TELE9X062A	0	0	0	0	0	0	0	1
Samsung	TEXX2949PG28A	0	0	0	0	0	0	0	1
Siel	PT060	0	1	1	0	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	1	0
Thomson	CTT5020	0	0	0	0	0	0	1	1

Option 21. PIP Pll tuner control 2 mid byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 mid byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	1	0	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	1	0
Samsung	TEXX2949PG28A	0	0	0	0	0	0	1	0
Siel	PT060	0	1	0	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0
Thomson	CTT5020	0	0	0	0	0	1	1	0

Option 22. PIP Pll tuner control 2 high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 high byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	0	0	1	1	0	1	0	0
Alps	TELE9X062A	0	0	0	0	1	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0
Siel	PT060	0	0	1	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	1	0	0	0	0	1	0	1

Option 23. PIP Pll tuner VHF LOW - VHF HIGH crossover low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF LOW - VHF HIGH crossover low byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 0 1 0 1 0	(0A hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 0 1 0 0 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	1 0 1 0 1 0 1 0	(AA hex)

Option 24. PIP Pll tuner VHF LOW - VHF HIGH crossover high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF LOW - VHF HIGH crossover high byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 0 1 1 0 0	(0C hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 0 1 1 0 1	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	0 0 0 0 1 0 0 1	(09 hex)

Option 25. PIP Pll tuner VHF HIGH - UHF crossover low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF HIGH - UHF crossover low byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	1 1 1 0 0 0 1 0	(E2 hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	1 0 1 0 0 0 1 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	1 0 1 0 0 0 1 0	(A2 hex)

Option 26. PIP Pll tuner VHF HIGH - UHF crossover high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF HIGH - UHF crossover high byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 1 1 1 1 0	(1D hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 1 1 1 1 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	0 0 0 1 1 0 1 1	(1B hex)

Option 27. LANGUAGE AVAILABLE 1

B7:	L7	=	DANISH
B6:	L6	=	SWEDISH
B5:	L5	=	ITALIAN
B4:	L4	=	PORTUGUESE
B3:	L3	=	SPANISH
B2:	L2	=	FRENCH
B1:	L1	=	GERMAN
B0:	L0	=	ENGLISH

1: Language available
0: Language not available

Option 28. LANGUAGE AVAILABLE 2

B7:	L15	=	RUSSIA,
B6:	L14	=	BULGARIAN,
B5:	L13	=	RUMANIAN,
B4:	L12	=	CROATIC,
B3:	L11	=	POLISH
B2:	L10	=	CZECH
B1:	L9	=	HUNGARY
B0:	L8	=	TURKEY

1: Language available
0: Language not available

Option 29. LANGUAGE AVAILABLE 3 and Zoom Mode Available

B7:	ZSP	=	SUPER ZOOM MODE
B6:	ZSB	=	SUBTITLE ZOOM MODE
B5:	ZCN	=	CINEMA ZOOM MODE
B4:	b4	=	x
B3:	L19	=	Not used
B2:	L18	=	Not used
B1:	L17	=	ARABIC
B0:	L16	=	HEBREW

1: Available
0: Not available

Option 30. MENU COLOR SELECTION HEADER/BOTTOM BACKGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 0 1 0 0	blue

Option 31. MENU COLOR SELECTION HEADER FOREGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0	
default	0	0	0	0	0	1	1	1	white

Option 32. MENU COLOR SELECTION ITEMS BACKGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0	
default	0	0	1	1	0	0	1	0	cyan

Option 33. MENU COLOR SELECTION ITEMS FOREGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0	
default	0	0	0	0	1	0	0	0	black

Option 34. MENU COLOR SELECTION CURSOR BACKGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0	
default	0	0	0	0	0	1	0	0	blue

Option 35. MENU COLOR SELECTION CURSOR FOREGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 0 1 1 1	white

Option 36. MENU COLOR SELECTION BOTTOM FOREGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 0 1 1 1	white

Option 37. MENU COLOR SELECTION LISTBOX FOREGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 0 0 0 1	red

Option 38. TV TELETEXT MODE SELECTION, Child Lock, Standard, Equalizer, Country

B7:	B7	=	x
B6:	C	=	note 6
B5:	LM	=	note 5
B4:	EQ	=	note 4
B3:	St	=	note 3
B2:	CL	=	note 2
B1:	T1	=	note 1
B0:	T0	=	note 1

note 1:

Teletext selection

T1, T0:

0,1	=	No TV Text
0,0	=	Simple TV Text (One page)
1,0	=	Fasttext/Toptext TV Text (Eight pages)

note 2 :

ST	=	Child Lock
0	=	Off
1	=	On (Active)

note 3 :

St	=	Standard available
0	=	Standard not available
1	=	Standard available

note 4 :

EQ	=	Equalizer available
0	=	Equalizer not available
1	=	Equalizer available

note 5 :

EQ	=	List Mode available
0	=	List Mode not available
1	=	List Mode available

note 6 :

EQ	=	Country Line available
0	=	Country Line not available
1	=	Country Line available

Option 39. PERSONAL PREFERANS EQUALIZER BAND 1

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 1	0	0	0	0	0	1	1	0

Option 40. PERSONAL PREFERANS EQUALIZER BAND 2

B7:	b7	=	note 1

B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 2	0	0	0	0	0	1	1	0

Option 41. PERSONAL PREFERANS EQUALIZER BAND 3

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 3	0	0	0	0	0	1	1	0

Option 42. PERSONAL PREFERANS EQUALIZER BAND 4

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 4	0	0	0	0	0	1	1	0

Option 43. PERSONAL PREFERANS EQUALIZER BAND 5

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0
EQUALIZER BAND 5	0 0 0 0 0 1 1 0

Option 44. SOUND EFFECT (STANDARD, MUSIC, SPEECH, JAZZ,PP)

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Option 45. VOLUME OFFSET LEFT

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Option 46. VOLUME OFFSET RIGHT

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Option 47. VOLUME OFFSET CENTER

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Option 48. VOLUME OFFSET REAR

B7:	b7	=	note 1
B6:	b6	=	note 1

B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Option 49. SURROUND DELAY

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Option 50. FM PRESCALE

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0	
FM PRESCALE	0	0	0	0	0	1	1	0	(**AVL On**)

Option 51. NICAM PRESCALE

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0	
NICAM PRESCALE	0	0	0	0	0	1	1	0	(**AVL On**)

Option 52. SCART PRESCALE and AVL Bit

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1

B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
SCART PRESCALE	0 0 0 0 1 1 0 0	(**AVL On**)

Option 53. I2S PRESCALE

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
I2S PRESCALE	0 0 0 0 0 1 1 0	(**AVL On**)

Option 54. MSP SCART OUTPUT VOLUME

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
MSP SCART OUTPUT VOLUME	0 0 0 0 0 1 1 0	(**AVL On**)

Option 55. SPEAKER SETUP

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

b7 b6 b5 b4 b3 b2 b1 b0

SPEAKER SETUP (L/R, L/C/R, L/R/S, L/C/R/S)	0 0 0 0 0 0 0 0	(**AVL On**)

Option 56. AUDIO OPTIONS

B7:	b7	=	x
B6:	b6	=	x
B5:	b5	=	x
B4:	Trs	=	note 1
B3:	Trb	=	note 2
B2:	Bbe	=	note 3
B1:	Spa	=	note 4
B0:	Avl	=	note 5

note 1 :

Trs = TruSurround

0 = TruSurround not available
1 = TruSurround available

note 2 :

Trb = TruBass

0 = TruBass not available
1 = TruBass available

note 3 :

Bbe = BBE

0 = BBE not available
1 = BBE available

note 4 :

Spa = Spatial Efect available

0 = Spatial Efect not available
1 = Spatial Efect available

note 5 :

Avl = Automatic volume level available

0 = Automatic volume level not available
1 = Automatic volume level available

Option 57. MSP OPTION

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
RESERVED FOR MSP

Option 58. MSP OPTION

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
RESERVED FOR MSP

Option 59. MSP OPTION

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
RESERVED FOR MSP

Option 60. Power Delay Time

B7:	L7	=	note 1
B6:	L6	=	note 1
B5:	L5	=	note 1
B4:	L4	=	note 1
B3:	L3	=	note 1
B2:	L2	=	note 1
B1:	L1	=	note 1
B0:	L0	=	note 1

Note 1:

	L7	L6	L5	L4	L3	L2	L1	L0
Default Value :	0	0	0	0	0	0	1	0

1000 MSEC = 1SN

L7L6L5L4L3L2L1L0		
00000000	=	0 msec
00000001	=	25 msec
00000010	=	50 msec
00000011	=	75 msec
00000100	=	100 msec
00000101	=	125 msec
00000110	=	150 msec
00000111	=	175 msec
00001000	=	200 msec
00001001	=	225 msec
00001010	=	250 msec
00001011	=	275 msec
00001100	=	300 msec

00001101	=	325 msec
00001110	=	350 msec
00001111	=	375 msec
00010000	=	400 msec
00010001	=	425 msec
00010010	=	450 msec
00010011	=	475 msec
00010100	=	500 msec
00010101	=	525 msec
00010110	=	550 msec
00010111	=	575 msec
00011000	=	600 msec
00011001	=	625 msec
00011010	=	650 msec
00011011	=	675 msec
00011100	=	700 msec
00011101	=	725 msec
00011110	=	750 msec
00011111	=	775 msec
00100000	=	800 msec
00100001	=	825 msec
00100010	=	850 msec
00100011	=	875 msec
00100100	=	900 msec
00100101	=	925 msec
00100110	=	950 msec
00100111	=	975 msec
00101000	=	1000 msec
00101001	=	1025 msec
00101010	=	1050 msec
00101011	=	1075 msec
00101100	=	1100 msec
00101101	=	1125 msec
00101110	=	1150 msec
00101111	=	1175 msec
00110000	=	1200 msec
00110001	=	1225 msec
00110010	=	1250 msec
00110011	=	1275 msec
00110100	=	1300 msec
00110101	=	1325 msec
00110110	=	1350 msec
00110111	=	1375 msec
00111000	=	1400 msec
00111001	=	1425 msec
00111010	=	1450 msec
00111011	=	1475 msec
00111100	=	1500 msec
00111101	=	1525 msec
00111110	=	1550 msec
00111111	=	1575 msec
01000000	=	1600 msec
01000001	=	1625 msec
01000010	=	1650 msec
01000011	=	1675 msec
01000100	=	1700 msec
01000101	=	1725 msec
01000110	=	1750 msec
01000111	=	1775 msec
01001000	=	1800 msec

01001001	=	1825 msec
01001010	=	1850 msec
01001011	=	1875 msec
01001100	=	1900 msec
01001101	=	1925 msec
01001110	=	1950 msec
01001111	=	1975 msec
01010000	=	2000 msec
01010001	=	2025 msec
01010010	=	2050 msec
01010011	=	2075 msec
01010100	=	2100 msec
01010101	=	2125 msec
01010110	=	2150 msec
01010111	=	2175 msec
01011000	=	2200 msec
01011001	=	2225 msec
01011010	=	2250 msec
01011011	=	2275 msec
01011100	=	2300 msec
01011101	=	2325 msec
01011110	=	2350 msec
01011111	=	2375 msec
01100000	=	2400 msec
01100001	=	2425 msec
01100010	=	2450 msec
01100011	=	2475 msec
01100100	=	2500 msec
01100101	=	2525 msec
01100110	=	2550 msec
01100111	=	2575 msec
01101000	=	2600 msec
01101001	=	2625 msec
01101010	=	2650 msec
01101011	=	2675 msec
01101100	=	2700 msec
01101101	=	2725 msec
01101110	=	2750 msec
01101111	=	2775 msec
01110000	=	2800 msec
01110001	=	2825 msec
01110010	=	2850 msec
01110011	=	2875 msec
01110100	=	2900 msec
01110101	=	2925 msec
01110110	=	2950 msec
01110111	=	2975 msec
01111000	=	3000 msec
01111001	=	3025 msec
01111010	=	3050 msec
01111011	=	3075 msec
01111100	=	3100 msec
01111101	=	3125 msec
01111110	=	3150 msec
01111111	=	3175 msec
10000000	=	3200 msec
10000001	=	3225 msec
10000010	=	3250 msec
10000011	=	3275 msec
10000100	=	3300 msec

10000101	=	3325 msec
10000110	=	3350 msec
10000111	=	3375 msec
10001000	=	3400 msec
10001001	=	3425 msec
10001010	=	3450 msec
10001011	=	3475 msec
10001100	=	3500 msec
10001101	=	3525 msec
10001110	=	3550 msec
10001111	=	3575 msec
10010000	=	3600 msec
10010001	=	3625 msec
10010010	=	3650 msec
10010011	=	3675 msec
10010100	=	3700 msec
10010101	=	3725 msec
10010110	=	3750 msec
10010111	=	3775 msec
10011000	=	3800 msec
10011001	=	3825 msec
10011010	=	3850 msec
10011011	=	3875 msec
10011100	=	3900 msec
10011101	=	3925 msec
10011110	=	3950 msec
10011111	=	3975 msec
10100000	=	4000 msec
10100001	=	4025 msec
10100010	=	4050 msec
10100011	=	4075 msec
10100100	=	4100 msec
10100101	=	4125 msec
10100110	=	4150 msec
10100111	=	4175 msec
10101000	=	4200 msec
10101001	=	4225 msec
10101010	=	4250 msec
10101011	=	4275 msec
10101100	=	4300 msec
10101101	=	4325 msec
10101110	=	4350 msec
10101111	=	4375 msec
10110000	=	4400 msec
10110001	=	4425 msec
10110010	=	4450 msec
10110011	=	4475 msec
10110100	=	4500 msec
10110101	=	4525 msec
10110110	=	4550 msec
10110111	=	4575 msec
10111000	=	4600 msec
10111001	=	4625 msec
10111010	=	4650 msec
10111011	=	4675 msec
10111100	=	4700 msec
10111101	=	4725 msec
10111110	=	4750 msec
10111111	=	4775 msec
11000000	=	4800 msec

11000001	=	4825 msec
11000010	=	4850 msec
11000011	=	4875 msec
11000100	=	4900 msec
11000101	=	4925 msec
11000110	=	4950 msec
11000111	=	4975 msec
11001000	=	5000 msec
11001001	=	5025 msec
11001010	=	5050 msec
11001011	=	5075 msec
11001100	=	5100 msec
11001101	=	5125 msec
11001110	=	5150 msec
11001111	=	5175 msec
11010000	=	5200 msec
11010001	=	5225 msec
11010010	=	5250 msec
11010011	=	5275 msec
11010100	=	5300 msec
11010101	=	5325 msec
11010110	=	5350 msec
11010111	=	5375 msec
11011000	=	5400 msec
11011001	=	5425 msec
11011010	=	5450 msec
11011011	=	5475 msec
11011100	=	5500 msec
11011101	=	5525 msec
11011110	=	5550 msec
11011111	=	5575 msec
11100000	=	5600 msec
11100001	=	5625 msec
11100010	=	5650 msec
11100011	=	5675 msec
11100100	=	5700 msec
11100101	=	5725 msec
11100110	=	5750 msec
11100111	=	5775 msec
11101000	=	5800 msec
11101001	=	5825 msec
11101010	=	5850 msec
11101011	=	5875 msec
11101100	=	5900 msec
11101101	=	5925 msec
11101110	=	5950 msec
11101111	=	5975 msec
11110000	=	6000 msec
11110001	=	6025 msec
11110010	=	6050 msec
11110011	=	6075 msec
11110100	=	6100 msec
11110101	=	6125 msec
11110110	=	6150 msec
11110111	=	6175 msec
11111000	=	6200 msec
11111001	=	6225 msec
11111010	=	6250 msec
11111011	=	6275 msec
11111100	=	6300 msec

11111101	=	6325 msec
11111110	=	6350 msec
11111111	=	6375 msec

	R	G	B		R	G	B		R	G	B		R	G	B
	0	0	0	16	13	9	9	32	5	5	0	48	11	0	[illegible]
	15	0	0	17	11	4	4	33	11	15	5	49	5	8	[illegible]
	0	15	0	18	8	2	2	34	6	13	0	50	6	14	[illegible]
	15	15	0	19	6	2	2	35	8	5	15	51	0	12	[illegible]
	0	0	15	20	15	14	13	36	2	5	0	52	0	8	[illegible]
	15	0	15	21	14	12	11	37	10	15	13	53	12	12	[illegible]
	0	15	15	22	13	8	6	38	3	15	10	54	11	8	[illegible]
	15	15	15	23	10	5	2	39	0	15	7	55	13	8	[illegible]
	0	0	0	24	14	13	11	40	0	6	3	56	15	11	[illegible]
	7	0	0	25	13	10	7	41	12	13	15	57	15	4	[illegible]
	0	7	0	26	12	7	3	42	6	9	15	58	13	0	[illegible]
	7	7	0	27	13	10	5	43	0	7	15	59	14	14	[illegible]
	0	0	7	28	10	7	2	44	0	3	11	60	11	11	[illegible]
	7	0	7	29	15	15	9	45	0	1	8	61	7	0	[illegible]
	0	7	7	30	11	11	0	46	15	9	15	62	5	5	[illegible]
	7	7	7	31	3	3	0	47	15	4	15	63	15	7	[illegible]

	76543210	Bit Positions		76543210
0	00000000		32	00100000
1	00000001		33	00100001
2	00000010		34	00100010
3	00000011		35	00100011
4	00000100		36	00100100
5	00000101		37	00100101
6	00000110		38	00100110
7	00000111		39	00100111
8	00001000		40	00101000
9	00001001		41	00101001
10	00001010		42	00101010
11	00001011		43	00101011
12	00001100		44	00101100
13	00001101		45	00101101
14	00001110		46	00101110
15	00001111	Colour Code	47	00101111
16	00010000		48	00110000
17	00010001		49	00110001
18	00010010		50	00110010
19	00010011		51	00110011
20	00010100		52	00110100
21	00010101		53	00110101
22	00010110		54	00110110
23	00010111		55	00110111
24	00011000		56	00111000
25	00011001		57	00111001
26	00011010		58	00111010
27	00011011		59	00111011
28	00011100		60	00111100
29	00011101		61	00111101
30	00011110		62	00111110
31	00011111		63	00111111

FINISHED OPTION TABLE

Option 61. DUAL LIMIT

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Dual Identification Limit related to reading DFP Register 0018h – Stereo Detection Register of MSP 34xxD in German dual transmissions.

	b7 b6 b5 b4 b3 b2 b1 b0	
DUAL LIMIT	0 0 0 1 0 0 1 0	(**AVL On and Off**)

Option 62. STEREO LIMIT

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Stereo Identification Limit related to reading DFP Register 0018h – Stereo Detection Register of MSP34xxD in German Stereo Transmissions.

	b7 b6 b5 b4 b3 b2 b1 b0	
STEREO LIMIT	1 1 1 1 0 0 0 0	(**AVL ON and Off**)

Option 63. AUTO SWITCH THRESHOLD

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Auto FM_AM : FP Register 21h Automatic switching with external threshold
B2, B1, B0 : Bit10, Bit9,Bit8 of the register
B7, B6, B5, B4,B3 : Bit7,Bit6, Bit5, Bit4, Bit3 of the register
(Bit2,Bit1 of the register is always 0 and Bit0 of the register is always 1.)

	b7	b6	b5	b4	b3	b2	b1	b0	
AUTO SWITCH THRESHOLD	0	1	0	0	0	0	1	1	(**AVL On and off, Threshold 800**)
		0	1 ???						

Option 64. DFP ADDRESS

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Write to any of the DFP Registers when the power is on: If this byte or option is zero, you do not use this option.
If you input a number to this option, you write the following bytes to the register addressed by that number.

	b7	b6	b5	b4	b3	b2	b1	b0	
DFP ADDRESS	0	0	0	0	0	0	0	0	(Under normal conditions)

ADJUST 00-65

ADJUST 00	=	White Point RED
ADJUST 01	=	White Point GREEN
ADJUST 02	=	White Point BLUE
ADJUST 03	=	AGC
ADJUST 04	=	IF-PLL Negative
ADJUST 05	=	IF-PLL Positive
ADJUST 06	=	Y-Delay PAL
ADJUST 07	=	Y-Delay SECAM
ADJUST 08	=	Y-Delay NTSC
ADJUST 09	=	Y-Delay OTHER
ADJUST 10	=	4:3 Vertical Zoom
ADJUST 11	=	4:3 Vertical Scroll
ADJUST 12	=	4:3 Horizontal Shift
ADJUST 13	=	4:3 Vertical Slope
ADJUST 14	=	4:3 Vertical Amplitude
ADJUST 15	=	4:3 S-correction
ADJUST 16	=	4:3 Vertical Shift
ADJUST 17	=	4:3 EW Width
ADJUST 18	=	4:3 EW Parabola Width
ADJUST 19	=	4:3 EW Corner Parabola
ADJUST 20	=	4:3 EW Trapezium
ADJUST 21	=	16:9 Vertical Zoom
ADJUST 22	=	16:9 Vertical Scroll
ADJUST 23	=	16:9 Horizontal Shift
ADJUST 24	=	16:9 Vertical Slope
ADJUST 25	=	16:9 Vertical Amplitude
ADJUST 26	=	16:9 S-correction
ADJUST 27	=	16:9 Vertical Shift
ADJUST 28	=	16:9 EW Width
ADJUST 29	=	16:9 EW Parabola Width
ADJUST 30	=	16:9 EW Corner Parabola
ADJUST 31	=	16:9 EW Trapezium
ADJUST 32	=	Subtitle Vertical Zoom
ADJUST 33	=	Subtitle Vertical Scroll
ADJUST 34	=	Subtitle Horizontal Shift
ADJUST 35	=	Subtitle Vertical Slope
ADJUST 36	=	Subtitle Vertical Amplitude
ADJUST 37	=	Subtitle S-correction
ADJUST 38	=	Subtitle Vertical Shift
ADJUST 39	=	Subtitle EW Width
ADJUST 40	=	Subtitle EW Parabola Width
ADJUST 41	=	Subtitle EW Corner Parabola
ADJUST 42	=	Subtitle EW Trapezium
ADJUST 43	=	Super Zoom Vertical Zoom
ADJUST 44	=	Super Zoom Vertical Scroll
ADJUST 45	=	Super Zoom Horizontal Shift
ADJUST 46	=	Super Zoom Vertical Slope
ADJUST 47	=	Super Zoom Vertical Amplitude
ADJUST 48	=	Super Zoom S-correction
ADJUST 49	=	Super Zoom Vertical Shift
ADJUST 50	=	Super Zoom EW Width

ADJUST 51	=	Super Zoom EW Parabola Width
ADJUST 52	=	Super Zoom EW Corner Parabola
ADJUST 53	=	Super Zoom EW Trapezium
ADJUST 54	=	Cinema Vertical Zoom
ADJUST 55	=	Cinema Vertical Scroll
ADJUST 56	=	Cinema Horizontal Shift
ADJUST 57	=	Cinema Vertical Slope
ADJUST 58	=	Cinema Vertical Amplitude
ADJUST 59	=	Cinema S-correction
ADJUST 60	=	Cinema Vertical Shift
ADJUST 61	=	Cinema EW Width
ADJUST 62	=	Cinema EW Parabola Width
ADJUST 63	=	Cinema EW Corner Parabola
ADJUST 64	=	Cinema EW Trapezium
ADJUST 65	=	OSD position

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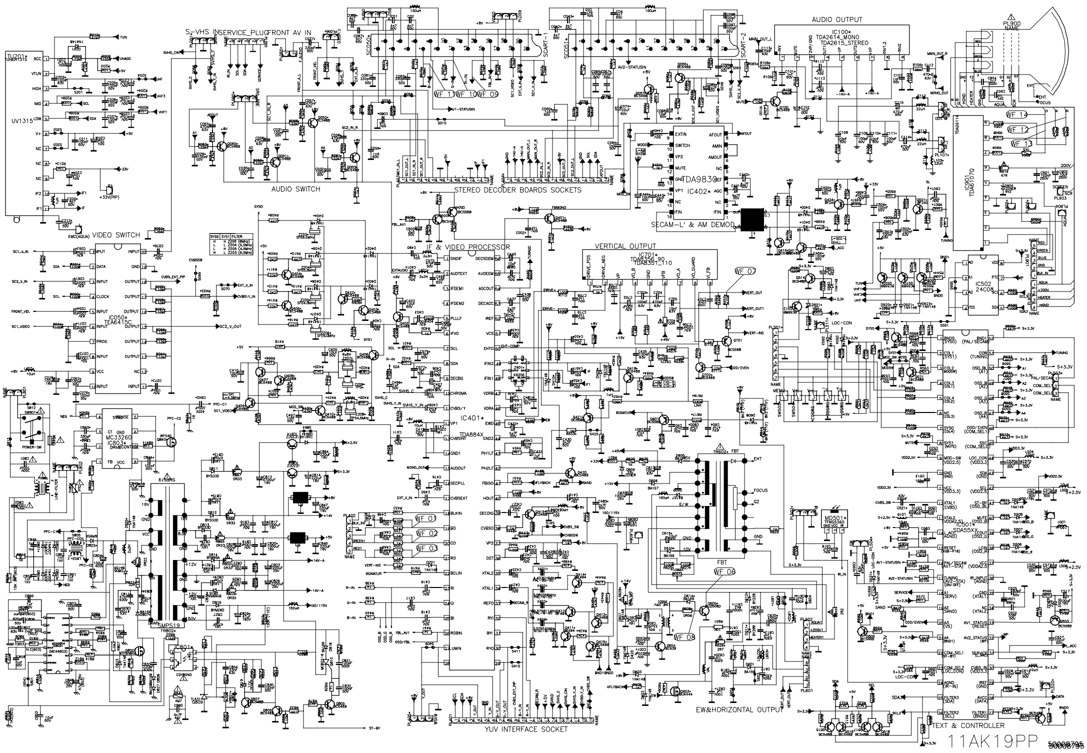
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No. 0106
August 2000



SM 0106	MAIN SCHEMATIC	HITACHI

C2842N		
CRN	Part No.	Description
A-A	30009832	CABLE 0.6MM BLUE (13CM)
C01	30000332	CAP SMD 4.7NF 50V K (0805)
C02	30000332	CAP SMD 4.7NF 50V K (0805)
C028	30000352	CAP EL 100UF 16V M
C029		
C03	30000332	CAP SMD 4.7NF 50V K (0805)
C030		
C031		
C032		
C04	30000332	CAP SMD 4.7NF 50V K (0805)
C051	30000092	CAP MKT 220NF 63V J
C052	30000294	CAP SMD 100NF 50V K (0805)
C053	30000092	CAP MKT 220NF 63V J
C054	30000092	CAP MKT 220NF 63V J
C059	30000300	CAP SMD 1.5NF 50V K
C060	30000300	CAP SMD 1.5NF 50V K
C061	30000242	CAP SMD 330PF 50V J
C062	30000242	CAP SMD 330PF 50V J
C064	30000300	CAP SMD 1.5NF 50V K
C065	30000300	CAP SMD 1.5NF 50V K
C066	30000242	CAP SMD 330PF 50V J
C067	30000242	CAP SMD 330PF 50V J
C068	30000345	CAP EL 10UF 50V M
C071	30000092	CAP MKT 220NF 63V J
C072	30000294	CAP SMD 100NF 50V K (0805)
C073	30000294	CAP SMD 100NF 50V K (0805)
C075	30000294	CAP SMD 100NF 50V K (0805)
C097	30000189	CAP SMD 100PF 50V J (0805)
C098	30000224	CAP SMD 220PF 50V J (08*05)
C099	30000189	CAP SMD 100PF 50V J (0805)
C101	30000330	CAP CER 4.7NF 50V K B
C101	30000336	CAP SMD 5.6NF 50V K (0805)
C102	30000330	CAP CER 4.7NF 50V K B
C102	30000345	CAP EL 10UF 50V M
C107	30000336	CAP SMD 5.6NF 50V K (0805)
C108	30000312	CAP SMD 22NF 50V K (0805)
C109	30000300	CAP SMD 1.5NF 50V K
C110	30000312	CAP SMD 22NF 50V K (0805)
C111	30000300	CAP SMD 1.5NF 50V K
C112	30000109	CAP MKT 470NF 63V J
C113	30000109	CAP MKT 470NF 63V J
C114	30000410	CAP EL 470UF 50V M
C115	30000410	CAP EL 470UF 50V M
C116	30000082	CAP MKT 15NF 63V J
C117	30000082	CAP MKT 15NF 63V J
C201	30000352	CAP EL 100UF 16V M
C202	30000074	CAP MKT 100NF 63V J
C203	30000345	CAP EL 10UF 50V M

C2842N		
CRN	Part No.	Description
C205	30000294	CAP SMD 100NF 50V K (0805)
C206	30000294	CAP SMD 100NF 50V K (0805)
C207	30000294	CAP SMD 100NF 50V K (0805)
C208	30000345	CAP EL 10UF 50V M
C209	30000345	CAP EL 10UF 50V M
C210	30000345	CAP EL 10UF 50V M
C211	30000294	CAP SMD 100NF 50V K (0805)
C212	30000191	CAP CER 100PF 50V J SL
C274	30000284	CAP SMD 1NF 50V K R (0805)
C275	30000284	CAP SMD 1NF 50V K R (0805)
C276	30000309	CAP SMD 2.2NF 50V K R
C277	30000309	CAP SMD 2.2NF 50V K R
C278	30000362	CAP EL 1UF 50V M
C279	30000263	CAP SMD 56PF 50V J CH (0805)
C293	30000390	CAP EL 330UF 25V M
C294	30000074	CAP MKT 100NF 63V J
C295	30000352	CAP EL 100UF 16V M
C297	30000352	CAP EL 100UF 16V M
C298	30000100	CAP MKT 330NF 63V J
C299	30000100	CAP MKT 330NF 63V J
C301	30000216	CAP SMD 1.8PF 50V J CH (0805)
C302	30000216	CAP SMD 1.8PF 50V J CH (0805)
C304	30000289	CAP SMD 10NF 50V K R (0805)
C306	30000345	CAP EL 10UF 50V M
C307	30000294	CAP SMD 100NF 50V K (0805)
C308	30000074	CAP MKT 100NF 63V J
C309	30000345	CAP EL 10UF 50V M
C316	30000284	CAP SMD 1NF 50V K R (0805)
C317	30000284	CAP SMD 1NF 50V K R (0805)
C318	30000074	CAP MKT 100NF 63V J
C319	30000393	CAP EL 3.3UF 50V M
C320	30000294	CAP SMD 100NF 50V K (0805)
C321	30000345	CAP EL 10UF 50V M
C322	30000345	CAP EL 10UF 50V M
C323	30000345	CAP EL 10UF 50V M
C326	30000371	CAP EL 22UF 50V M
C327	30000371	CAP EL 22UF 50V M
C328	30000284	CAP SMD 1NF 50V K R (0805)
C329	30000284	CAP SMD 1NF 50V K R (0805)
C330	30000284	CAP SMD 1NF 50V K R (0805)
C331	30000284	CAP SMD 1NF 50V K R (0805)
C332	30000417	CAP EL 6.8UF 50V M
C333	30000294	CAP SMD 100NF 50V K (0805)
C334		
C335	30000252	CAP SMD 47PF 50V J (08*05)
C336	30000252	CAP SMD 47PF 50V J (08*05)
C338	30000371	CAP EL 22UF 50V M
C339	30000256	CAP SMD 470PF 50V J (0805)
C340	30000100	CAP MKT 330NF 63V J

C2842N		
CRN	Part No.	Description
C341	30000256	CAP SMD 470PF 50V J (0805)
C342	30000100	CAP MKT 330NF 63V J
C343	30000224	CAP SMD 220PF 50V J (08*05)
C344	30000100	CAP MKT 330NF 63V J
C346	30000224	CAP SMD 220PF 50V J (08*05)
C347	30000371	CAP EL 22UF 50V M
C348	30000224	CAP SMD 220PF 50V J (08*05)
C349	30000100	CAP MKT 330NF 63V J
C350	30000224	CAP SMD 220PF 50V J (08*05)
C351	30000100	CAP MKT 330NF 63V J
C352	30000224	CAP SMD 220PF 50V J (08*05)
C353	30000100	CAP MKT 330NF 63V J
C355	30000284	CAP SMD 1NF 50V K R (0805)
C357	30000294	CAP SMD 100NF 50V K (0805)
C358		
C364		
C365	30000384	CAP EL 2.2UF 50V M
C366	30000294	CAP SMD 100NF 50V K (0805)
C368		
C369		
C370	30000384	CAP EL 2.2UF 50V M
C371	30000109	CAP MKT 470NF 63V J
C373	30000371	CAP EL 22UF 50V M
C374		
C379		
C385		
C400		
C401	30000371	CAP EL 22UF 50V M
C402	30000345	CAP EL 10UF 50V M
C403		
C403	30000074	CAP MKT 100NF 63V J
C404		
C405		
C405	30000345	CAP EL 10UF 50V M
C406		
C406	30000313	CAP CER 22NF 50V Z F
C407		
C407	30000384	CAP EL 2.2UF 50V M
C410	30000345	CAP EL 10UF 50V M
C411	30000334	CAP SMD 47NF 50V K (0805)
C412	30000312	CAP SMD 22NF 50V K (0805)
C413	30000375	CAP EL 220UF 16V M
C415	30000092	CAP MKT 220NF 63V J
C416	30000312	CAP SMD 22NF 50V K (0805)
C417	30000312	CAP SMD 22NF 50V K (0805)
C418	30000312	CAP SMD 22NF 50V K (0805)
C419	30000315	CAP SMD 220NF 25V Z (0805)
C421	30000220	CAP SMD 22PF 50V J (08*05)
C422	30000220	CAP SMD 22PF 50V J (08*05)

C2842N		
CRN	Part No.	Description
C423	30000322	CAP SMD 3.3NF 50V K (0805)
C424	30000294	CAP SMD 100NF 50V K (0805)
C425		
C426	30000353	CAP EL 100UF 25V M
C427	30000294	CAP SMD 100NF 50V K (0805)
C428	30000345	CAP EL 10UF 50V M
C430	30000309	CAP SMD 2.2NF 50V K R
C431	30000362	CAP EL 1UF 50V M
C432	30000413	CAP EL 4.7UF 50V M
C433	30000284	CAP SMD 1NF 50V K R (0805)
C434	30000284	CAP SMD 1NF 50V K R (0805)
C435	30000074	CAP MKT 100NF 63V J
C436	30000074	CAP MKT 100NF 63V J
C437	30000362	CAP EL 1UF 50V M
C438		
C439	30000284	CAP SMD 1NF 50V K R (0805)
C440		
C446	30000252	CAP SMD 47PF 50V J (08*05)
C447	30000252	CAP SMD 47PF 50V J (08*05)
C448	30000189	CAP SMD 100PF 50V J (0805)
C450	30000334	CAP SMD 47NF 50V K (0805)
C451	30002583	JUMPER WIRE 0.6MM
C452	30002583	JUMPER WIRE 0.6MM
C459	30000332	CAP SMD 4.7NF 50V K (0805)
C490	30000284	CAP SMD 1NF 50V K R (0805)
C497	30000300	CAP SMD 1.5NF 50V K
C498	30000189	CAP SMD 100PF 50V J (0805)
C499	30000300	CAP SMD 1.5NF 50V K
C500	30000393	CAP EL 3.3UF 50V M
C501	30000189	CAP SMD 100PF 50V J (0805)
C502	30000074	CAP MKT 100NF 63V J
C503	30000074	CAP MKT 100NF 63V J
C504	30000294	CAP SMD 100NF 50V K (0805)
C505	30000294	CAP SMD 100NF 50V K (0805)
C513	30000294	CAP SMD 100NF 50V K (0805)
C514		
C516	30000371	CAP EL 22UF 50V M
C517	30000352	CAP EL 100UF 16V M
C521	30000074	CAP MKT 100NF 63V J
C524	30000237	CAP SMD 33PF 50V J (08*05)
C525	30000237	CAP SMD 33PF 50V J (08*05)
C526		
C530		
C531	30000294	CAP SMD 100NF 50V K (0805)
C532	30000294	CAP SMD 100NF 50V K (0805)
C533		
C537	30000294	CAP SMD 100NF 50V K (0805)
C538		
C539		

C2842N		
CRN	Part No.	Description
C540		
C570	30000371	CAP EL 22UF 50V M
C571	30000371	CAP EL 22UF 50V M
C572	30000371	CAP EL 22UF 50V M
C573	30000371	CAP EL 22UF 50V M
C576	30000201	CAP SMD 15PF 50V J (08*05)
C577	30000201	CAP SMD 15PF 50V J (08*05)
C580	30000387	CAP EL 33UF 50V M
C583	30000294	CAP SMD 100NF 50V K (0805)
C590	30000294	CAP SMD 100NF 50V K (0805)
C601	30000387	CAP EL 33UF 50V M
C603	30000309	CAP SMD 2.2NF 50V K R
C604	30000106	CAP MKT 47NF 100V J
C605	30000075	CAP MKT 100NF 250V K (DC)
C606	30000388	CAP EL 33UF 160V M
C607	30000407	CAP EL 470UF 16V M
C608	30000323	CAP CER 33NF 50V K B
C610	30000131	CAP MKP 100NF 250V J
C611	30000174	CAP MKP 7.5NF 1.6KV 3.5%
C612	30000356	CAP EL 100UF 63V M
C617	30000156	CAP MKP 430NF 250V J
C618	30000394	CAP EL 3.3UF 160V M
C632	30000360	CAP EL 1000UF 25V M
C702	30000356	CAP EL 100UF 63V M
C704	30000402	CAP EL 47UF 100V M
C705	30000071	CAP MKT 10NF 63V J
C706	30000092	CAP MKT 220NF 63V J
C707	30000090	CAP MKT 22NF 100V J
C708	30000284	CAP SMD 1NF 50V K R (0805)
C709	30000074	CAP MKT 100NF 63V J
C715	30000284	CAP SMD 1NF 50V K R (0805)
C801	30000084	CAP MKT 150NF 275V M AC P=15
C802	30000084	CAP MKT 150NF 275V M AC P=15
C803	30000189	CAP SMD 100PF 50V J (0805)
C804	30000420	CAP EL 150UF 400V M
C806	30000342	CAP CER 820PF 50V K B
C807	30000074	CAP MKT 100NF 63V J
C808	30000284	CAP SMD 1NF 50V K R (0805)
C809	30000284	CAP SMD 1NF 50V K R (0805)
C811	30000161	CAP MKP 47NF 630V J
C813	30000411	CAP EL 4700UF 16V M
C814	30000375	CAP EL 220UF 16V M
C816	30000295	CAP CER 100NF 50V Z F
C817	30000359	CAP EL 1000UF 16V M
C819	30000295	CAP CER 100NF 50V Z F
C820	30000359	CAP EL 1000UF 16V M
C821	30000433	CAP CER 1NF 1KV M B
C822	30000295	CAP CER 100NF 50V Z F
C823	30000383	CAP EL 2200UF 25V M

C2842N		
CRN	Part No.	Description
C824	30000433	CAP CER 1NF 1KV M B
C825	30000295	CAP CER 100NF 50V Z F
C826	30000383	CAP EL 2200UF 25V M
C827	30007708	CAP CER 1NF 1KV K (PULSE)
C828	30000359	CAP EL 1000UF 16V M
C829	30000404	CAP EL 47UF 160V M (HR)
C830	30000295	CAP CER 100NF 50V Z F
C831	30000198	CAP CER 120PF 500V J SL
C832	30000294	CAP SMD 100NF 50V K (0805)
C833	30007308	CAP CER 220PF 1KV K (PULSE)
C845	30000375	CAP EL 220UF 16V M
C846	30000433	CAP CER 1NF 1KV M B
C847	30000375	CAP EL 220UF 16V M
C848	30000353	CAP EL 100UF 25V M
C850	30000433	CAP CER 1NF 1KV M B
C851	30000433	CAP CER 1NF 1KV M B
C852	30000433	CAP CER 1NF 1KV M B
C853	30000289	CAP SMD 10NF 50V K R (0805)
C854	30008805	CAP MKT 39NF 63V J
C855	30000284	CAP SMD 1NF 50V K R (0805)
C860	30000447	CAP CER 4.7NF 4KV M E
C864	30000375	CAP EL 220UF 16V M
C901	30000075	CAP MKT 100NF 250V K (DC)
C902	30000350	CAP EL 10UF 250V M
C903	30000434	CAP CER 1NF 2KV K B
C904	30000319	CAP CER 2.7NF 500V K B
CAB111	30009829	CABLE 1P R2.6 (8CM)
CAB142	30009834	CABLE 0.6MM BLUE (6CM)
CX8	30009849	CABLE 0.6MM BLUE (7CM)
D201	30001284	DIODE 1N4148
D301	30001369	DIODE ZENER 3.6V ZPD

C2842N		
CRN	Part No.	Description
D604	30001377	DIODE ZENER 33V UZT 33B
D605	30001317	DIODE BA157
D606	30001317	DIODE BA157
D607		
D608		
D609	30001317	DIODE BA157
D701		
D801	30001329	DIODE 1N4007
D802	30001329	DIODE 1N4007
D803	30001329	DIODE 1N4007
D804	30001329	DIODE 1N4007
D805	30001318	DIODE BA159
D807	30001318	DIODE BA159
D811	30001315	DIODE BYD33D
D812	30001315	DIODE BYD33D
D813	30001315	DIODE BYD33D
D814	30001307	DIODE BYW95A
D815	30001307	DIODE BYW95A
D816	30007681	DIODE UF5407
D818	30001318	DIODE BA159
D819	30001349	DIODE ZENER 11V
D822	30002583	JUMPER WIRE 0.6MM
D823	30001284	DIODE 1N4148
D826	30001318	DIODE BA159
D827	30001318	DIODE BA159
D904	30001344	DIODE ZENER 6.2V 1/2W
F801	20000848	FUSE ASSY.TK79-A (2.5A)
F801	35000136	FUSE HOLDER TK79-A (GRAY)
IC050	30001619	IC TEA6415C
IC100	30001525	IC TDA2615
IC301	30001664	IC MSP3410D SDIR64
IC304	30001518	IC TDA1308
IC307	30001495	IC TDA4472
IC401	30001573	IC TDA8840/N2
IC501	30011957	IC SDA55XX FLASH
IC701	30001561	IC TDA8356
IC801	30007069	IC TCDT1102G
IC802	30001499	IC MC44604P
IC804	30012088	IC LE33CZ (3.3V REG)
IC805	30001500	IC LM7808
IC807	30001622	IC 7805 (1A)
IC814	30010216	IC LE25CZ (2.5V REG)
IC901	30008721	IC TDA6108
J092		
J093		
J094		
J095		
J096	30002583	JUMPER WIRE 0.6MM
J097	30001734	JUMPER SMD (0805)

C2842N		
CRN	Part No.	Description
J098	30002583	JUMPER WIRE 0.6MM
J099		
J100	30002583	JUMPER WIRE 0.6MM
J100	30002583	JUMPER WIRE 0.6MM
J101	30002583	JUMPER WIRE 0.6MM
J102	30002583	JUMPER WIRE 0.6MM
J102	30002583	JUMPER WIRE 0.6MM
J103	30002583	JUMPER WIRE 0.6MM
J103	30002583	JUMPER WIRE 0.6MM
J104	30002583	JUMPER WIRE 0.6MM
J105		
J106		
J107		
J107		
J108		
J108		
J109		
J109		
J110		
J110		
J112		
J112		
J113	30001734	JUMPER SMD (0805)
J114		
J114		
J115		
J115		
J116		
J117		
J117		
J118		
J118		
J119		
J120	30001734	JUMPER SMD (0805)
J121	30001734	JUMPER SMD (0805)
J122	30001734	JUMPER SMD (0805)
J122		
J124		
J128		
J129	30001997	FIXED COIL 33UH Q60 J
J130		
J130		
J131		
J132		
J133		
J136		
J138		
J139		
J140	30002583	JUMPER WIRE 0.6MM

C2842N		
CRN	Part No.	Description
J141	30002583	JUMPER WIRE 0.6MM
J143		
J144		
J145		
J146		
J147		
J148		
J149		
J150		
J151		
J153		
J155		
J156		
J157		
J158		
J159		
J160		
J161		
J163	30001734	JUMPER SMD (0805)
J164		
J165	.	.
J166	.	.
J169		
J170		
J171		
J175	30002583	JUMPER WIRE 0.6MM
J177		
J178		
J179		
J180		
J182		
J183		
J184		
J186		
J187		
J188		
J189		
J190		
J191		
J192		
J193		
J194		
J195	30001734	JUMPER SMD (0805)
J196		
J197	30001734	JUMPER SMD (0805)
J198		
J199		
J200	30002583	JUMPER WIRE 0.6MM
J201		

C2842N		
CRN	Part No.	Description
J202		
J203		
J204		
J205		
J206		
J207		
J208		
J209		
J210		
J211		
J212		
J214		
J215		
J216		
J218		
J220		
J221		
J223		
J224	30001734	JUMPER SMD (0805)
J225		
J226		
J227		
J230		
J231		
J233	30001734	JUMPER SMD (0805)
J236	30001734	JUMPER SMD (0805)
J237		
J238		
J239		
J240		
J241		
J242		
J243		
J245		
J246		
J247		
J248		
J249		
J250		
J251		
J252		
J253		
J254		
J255		
J256		
J257		
J258		
J260		
J261	30002583	JUMPER WIRE 0.6MM

C2842N		
CRN	Part No.	Description
J262		
J263		
J264	30002583	JUMPER WIRE 0.6MM
J265		
J266		
J267		
J268		
J270		
J271		
J272	30002583	JUMPER WIRE 0.6MM
J273		
J274		
J275		
J276	.	.
J277		
J279		
J280		
J282		
J283		
J289		
J290		
J291		
J292		
J293		
J294		
J295		
J296		
J297	30002583	JUMPER WIRE 0.6MM
J299		
J300		
J302		
J400		
J401		
J405		
J406		
J450		
J450		
J498		
J499		
J500	30001734	JUMPER SMD (0805)
J570		
J580		
J581		
J583		
J584		
J585		
J586		
J587		
J588		

C2842N		
CRN	Part No.	Description
J589	30001734	JUMPER SMD (0805)
J590		
J591		
J592		
J598		
J599		
J610		
J611		
J612		
J613		
J614	30002583	JUMPER WIRE 0.6MM
J615		
J616		
J617		
J619		
J648		
J649	30002016	FIXED COIL 150UH Q60 K
J651		
J803	30002583	JUMPER WIRE 0.6MM
J804		
J805		
J808		
J810		
J820		
J821		
J850		
J901	30002583	JUMPER WIRE 0.6MM
J903	30002583	JUMPER WIRE 0.6MM
L001	30002016	FIXED COIL 150UH Q60 K
L050	30002015	FIXED COIL 150UH Q50 K (RAD)
L051	30002015	FIXED COIL 150UH Q50 K (RAD)
L101	30001996	FIXED COIL 22UH Q40 K
L102	30001996	FIXED COIL 22UH Q40 K
L201	30001979	FIXED COIL 1UH Q45 M-A
L301	30001987	FIXED COIL 4.7UH Q70 K-A
L302	30001987	FIXED COIL 4.7UH Q70 K-A
L303	30001987	FIXED COIL 4.7UH Q70 K-A
L304	30001986	FIXED COIL 3.3UH Q65 K
L306	30002002	FIXED COIL 47UH Q60 K
L307	30002002	FIXED COIL 47UH Q60 K
L308	30002002	FIXED COIL 47UH Q60 K
L309	30002002	FIXED COIL 47UH Q60 K
L310	30001979	FIXED COIL 1UH Q45 M-A
L315	30001996	FIXED COIL 22UH Q40 K
L316	30001996	FIXED COIL 22UH Q40 K
L402	30001986	FIXED COIL 3.3UH Q65 K
L403	30002583	JUMPER WIRE 0.6MM
L405	30001992	FIXED COIL 10UH Q65 K-A
L406	30001992	FIXED COIL 10UH Q65 K-A

C2842N		
CRN	Part No.	Description
L407	30001992	FIXED COIL 10UH Q65 K-A
L502	30001992	FIXED COIL 10UH Q65 K-A
L504	30001992	FIXED COIL 10UH Q65 K-A
L505	30001992	FIXED COIL 10UH Q65 K-A
L506	30001992	FIXED COIL 10UH Q65 K-A
L515	30001992	FIXED COIL 10UH Q65 K-A
L603	30002149	LINEARITY COIL 50UH (06-06A)
L605	30001999	FIXED COIL 40UH (LOSS COIL)
L801	30001984	FIXED COIL 2.2UH Q55 M-AX
L803	30002011	COIL CHOKE 150UH 0.82A RAD
LD501	30001279	LED RED/GREEN LTL293SJ
MD501	30001670	PREAMPLIFIER TFMS5360
PL050	30001783	CONN.MALE 5P (2005)
PL056	30001830	CONN MALE 2P TOP BLUE
PL100	30001762	CONN.MALE 2P (2052) GRAY
PL101	30008726	CONN.ASSY.3/55 W/BLACK(NELTRON)
PL101	30001764	CONN.MALE (2052) BLACK
PL102	30001902	JACK HEADPHONE STEREO WO/SW
PL1201	30001833	CONN MALE 2P SIDE BLUE
PL1202	30001844	CONN MALE 3P SIDE GREEN
PL1203	30001884	RCA JACK 1P YELLOW
PL1204	30001882	RCA JACK 1P WHITE
PL1205	30001883	RCA JACK 1P RED
PL300	30001809	CONN.FEMALE 12P MOLEX
PL301	30001811	CONN.FEMALE 14P MOLEX
PL304	30001844	CONN MALE 3P SIDE GREEN
PL305	30001776	CONN.MALE 3P(2703) RED
PL403	30001808	CONN.MALE 12P MOLEX
PL404	30001810	CONN.MALE 14P MOLEX
PL601	30001827	HRZ VRT CONN.(4P)
PL801	30001792	CONN.MALE 2P MOLEX
PL802	30001795	CONN.MALE 3P (DEG)
PL900	30001855	SOCKET CRT NARROWNECK W/GND
PL903	35000135	TEST PIN 1.1MM
Q055	30001454	TR BC548B
Q100	30001454	TR BC548B
Q301	30001455	TR BC558B
Q302	30001454	TR BC548B
Q402	30001454	TR BC548B
Q406	30001454	TR BC548B
Q407	30001454	TR BC548B
Q415	30001454	TR BC548B
Q420	30001454	TR BC548B
Q500	30001454	TR BC548B
Q501	30001423	TR BF240
Q502	30001455	TR BC558B
Q503	30001455	TR BC558B
Q504	30001455	TR BC558B
Q505	30001454	TR BC548B

C2842N		
CRN	Part No.	Description
Q506	30001454	TR BC548B
Q508	30001455	TR BC558B
Q510	30001455	TR BC558B
Q512	30001455	TR BC558B
Q514	30001454	TR BC548B
Q515	30001454	TR BC548B
Q516	30001454	TR BC548B
Q517	30001454	TR BC548B
Q518	30001454	TR BC548B
Q521	30001454	TR BC548B
Q522		
Q601	30001455	TR BC558B
Q604	30001435	TR BC639
Q605	30001440	TR 2506DF
Q701	30001455	TR BC558B
Q702	30001454	TR BC548B
Q802	30001385	TR MTP3N60E (PLASTIC)
Q805	.	.
Q806	.	.
Q807	.	.
Q809	30001506	IC TL431
Q810	30001384	TR MCR22-6
R040		
R041		
R044	30000459	RES CF 1/4W 100R J
R045	30000524	RES SMD 1/10W 150R J (0805)
R049	30000717	RES SMD 1/10W 470R J (0805)
R050	30000464	RES SMD 1/10W 100R J
R051	30000464	RES SMD 1/10W 100R J
R065	30000797	RES SMD 1/10W 75R J (0805)
R066	30000774	RES SMD 1/10W 680R J (0805)
R067	30000469	RES SMD 1/10W 1K J 0805
R068	30000774	RES SMD 1/10W 680R J (0805)
R069	30000469	RES SMD 1/10W 1K J 0805
R070	30000797	RES SMD 1/10W 75R J (0805)
R071	30000797	RES SMD 1/10W 75R J (0805)
R072	30000797	RES SMD 1/10W 75R J (0805)
R073	30000797	RES SMD 1/10W 75R J (0805)
R075	30000653	RES SMD 1/10W 33R J
R078	30000774	RES SMD 1/10W 680R J (0805)
R079	30000469	RES SMD 1/10W 1K J 0805
R080	30000774	RES SMD 1/10W 680R J (0805)
R081	30000469	RES SMD 1/10W 1K J 0805
R082	30000469	RES SMD 1/10W 1K J 0805
R083	30000653	RES SMD 1/10W 33R J
R084	30000710	RES SMD 1/10W 47R J (0805)
R090	30000529	RES SMD 1/10W 1.5K J
R094	30000475	RES SMD 1/10W 10K J 0805
R095	30000475	RES SMD 1/10W 10K J 0805

C2842N		
CRN	Part No.	Description
R096	30000475	RES SMD 1/10W 10K J 0805
R097	30000475	RES SMD 1/10W 10K J 0805
R098	30000475	RES SMD 1/10W 10K J 0805
R099	.	.
R100	30000727	RES SMD 1/10W 47K J (0805)
R101	30000471	RES CF 1/4W 10K J
R101	30000459	RES CF 1/4W 100R J
R102	30000459	RES CF 1/4W 100R J
R102	30000747	RES SMD 1/10W 560R J (0805)
R103	30000471	RES CF 1/4W 10K J
R103	30000710	RES SMD 1/10W 47R J (0805)
R104	30000471	RES CF 1/4W 10K J
R104	30000457	RES SMD 1/10W 10R J 0805
R105	30000457	RES SMD 1/10W 10R J 0805
R106	30000567	RES SMD 1/10W 18K J 0805
R108	30000564	RES CF 1/4W 18K J
R200	30000503	RES SMD 1/10W 12K J (0805)
R201	30000723	RES CF 1/4W 47K J
R202	30000459	RES CF 1/4W 100R J
R203	30000471	RES CF 1/4W 10K J
R204	30000459	RES CF 1/4W 100R J
R205	30000459	RES CF 1/4W 100R J
R212	30000727	RES SMD 1/10W 47K J (0805)
R303	30000469	RES SMD 1/10W 1K J 0805
R304	30000717	RES SMD 1/10W 470R J (0805)
R305	30000717	RES SMD 1/10W 470R J (0805)
R306	30000464	RES SMD 1/10W 100R J
R307	30000464	RES SMD 1/10W 100R J
R308	30000464	RES SMD 1/10W 100R J
R309	30000590	RES CF 1/4W 2.2K J
R310	30000590	RES CF 1/4W 2.2K J
R311	30000531	RES CF 1/4W 15K J
R313	30000534	RES SMD 1/10W 15K J (0805)
R314	30000534	RES SMD 1/10W 15K J (0805)
R315	30000534	RES SMD 1/10W 15K J (0805)
R327	30000593	RES SMD 1/10W 2.2K J (0805)
R328	30000721	RES SMD 1/10W 4.7K J
R330	30000469	RES SMD 1/10W 1K J 0805
R341	30000524	RES SMD 1/10W 150R J (0805)
R343	30001248	RES FUSE 1/4W 4.7R J
R357	30000721	RES SMD 1/10W 4.7K J
R358	30000721	RES SMD 1/10W 4.7K J
R359	30000464	RES SMD 1/10W 100R J
R360	30000464	RES SMD 1/10W 100R J
R361	30000464	RES SMD 1/10W 100R J
R362	30000475	RES SMD 1/10W 10K J 0805
R363	30000475	RES SMD 1/10W 10K J 0805
R364	30000464	RES SMD 1/10W 100R J
R378	30000471	RES CF 1/4W 10K J

C2842N		
CRN	Part No.	Description
R379	30000475	RES SMD 1/10W 10K J 0805
R386	30000475	RES SMD 1/10W 10K J 0805
R387	30000475	RES SMD 1/10W 10K J 0805
R399	30000717	RES SMD 1/10W 470R J (0805)
R400	30000717	RES SMD 1/10W 470R J (0805)
R402	30000706	RES CF 1/4W 47R J
R403	30000659	RES SMD 1/10W 330R J (0805)
R404	30000688	RES SMD 1/10W 390R J (0805)
R405	30000469	RES SMD 1/10W 1K J 0805
R407	30000459	RES CF 1/4W 100R J
R417		
R418	30000735	RES SMD 1/10W 4.7R J (0805)
R419	30000710	RES SMD 1/10W 47R J (0805)
R420	30000593	RES SMD 1/10W 2.2K J (0805)
R421	30000499	RES SMD 1/10W 1.2K J (0805)
R422	30000558	RES SMD 1/10W 180R J
R426	30000659	RES SMD 1/10W 330R J (0805)
R428	30000650	RES CF 1/4W 33R J
R429	30000524	RES SMD 1/10W 150R J (0805)
R431	30000459	RES CF 1/4W 100R J
R432	30000459	RES CF 1/4W 100R J
R433	30000475	RES SMD 1/10W 10K J 0805
R437	30000469	RES SMD 1/10W 1K J 0805
R438	30000469	RES SMD 1/10W 1K J 0805
R439	30000469	RES SMD 1/10W 1K J 0805
R440	30000469	RES SMD 1/10W 1K J 0805
R441		
R446	30000480	RES SMD 1/10W 100K J (0805)
R447	30000626	RES SMD 1/10W 270R J
R448	30000466	RES CF 1/4W 1K J
R449	30000489	RES SMD 1/10W 1R J (0805)
R450	30000631	RES SMD 1/10W 2.7K J 0805
R451	30000633	RES CF 1/4W 27K J
R454	30000534	RES SMD 1/10W 15K J (0805)
R455	30000650	RES CF 1/4W 33R J
R456	30000550	RES SMD 1/10W 160K J
R457	30000606	RES SMD 1/10W 2.2M J
R458	30000732	RES SMD 1/10W 470K J
R459	30000697	RES SMD 1/10W 39K G
R460	30000770	RES CF 1/4W 680R J
R465	30000688	RES SMD 1/10W 390R J (0805)
R485	30000727	RES SMD 1/10W 47K J (0805)
R486	30000721	RES SMD 1/10W 4.7K J
R488	30000471	RES CF 1/4W 10K J
R492	30000588	RES SMD 1/10W 220R J 0805
R493	30000588	RES SMD 1/10W 220R J 0805
R498	30000563	RES SMD 1/10W 1.8K J (0805)
R500		
R501	30000614	RES SMD 1/10W 2.4K J (0805)

C2842N		
CRN	Part No.	Description
R502		
R503		
R504	30000534	RES SMD 1/10W 15K J (0805)
R505	30000475	RES SMD 1/10W 10K J 0805
R506	30000696	RES SMD 1/10W 39K J (0805)
R507		
R508	30000466	RES CF 1/4W 1K J
R509	30000593	RES SMD 1/10W 2.2K J (0805)
R510	30000675	RES SMD 1/10W 3.3M J
R511	30000668	RES SMD 1/10W 33K J 0805
R512	30000727	RES SMD 1/10W 47K J (0805)
R513	30000727	RES SMD 1/10W 47K J (0805)
R514	30000727	RES SMD 1/10W 47K J (0805)
R515	30000727	RES SMD 1/10W 47K J (0805)
R516	30000464	RES SMD 1/10W 100R J
R517	30000464	RES SMD 1/10W 100R J
R519	30000459	RES CF 1/4W 100R J
R520	30000459	RES CF 1/4W 100R J
R521	30000459	RES CF 1/4W 100R J
R522	30000459	RES CF 1/4W 100R J
R523	30000664	RES SMD 1/10W 3.3K J (0805)
R524	30000475	RES SMD 1/10W 10K J 0805
R525	30000475	RES SMD 1/10W 10K J 0805
R526	30000475	RES SMD 1/10W 10K J 0805
R527	30000721	RES SMD 1/10W 4.7K J
R528	30000466	RES CF 1/4W 1K J
R529	30000466	RES CF 1/4W 1K J
R530	30000466	RES CF 1/4W 1K J
R531	30000718	RES CF 1/4W 4.7K J
R532	30000664	RES SMD 1/10W 3.3K J (0805)
R533	30000721	RES SMD 1/10W 4.7K J
R534	30000475	RES SMD 1/10W 10K J 0805
R535	30000721	RES SMD 1/10W 4.7K J
R536	30000475	RES SMD 1/10W 10K J 0805
R537	30000593	RES SMD 1/10W 2.2K J (0805)
R538	30000475	RES SMD 1/10W 10K J 0805
R539	30000475	RES SMD 1/10W 10K J 0805
R540	30000818	RES SMD 1/10W 8.2K J (0805)
R541		
R542	30000721	RES SMD 1/10W 4.7K J
R543	30000524	RES SMD 1/10W 150R J (0805)
R544	30000471	RES CF 1/4W 10K J
R545	30000469	RES SMD 1/10W 1K J 0805
R546	30000475	RES SMD 1/10W 10K J 0805
R547	30000475	RES SMD 1/10W 10K J 0805
R548	30000721	RES SMD 1/10W 4.7K J
R549	30000531	RES CF 1/4W 15K J
R550	30000721	RES SMD 1/10W 4.7K J
R551		

C2842N		
CRN	Part No.	Description
R552	30000475	RES SMD 1/10W 10K J 0805
R553	30000471	RES CF 1/4W 10K J
R554	30000815	RES CF 1/4W 8.2K J
R556	30000668	RES SMD 1/10W 33K J 0805
R558	30000475	RES SMD 1/10W 10K J 0805
R559	30000588	RES SMD 1/10W 220R J 0805
R561	30000692	RES SMD 1/10W 3.9K J 0805
R562	30000471	RES CF 1/4W 10K J
R563	30000471	RES CF 1/4W 10K J
R564	30000475	RES SMD 1/10W 10K J 0805
R565		
R566	30010167	RES SMD 1/10W 56R J 0805
R568	30000475	RES SMD 1/10W 10K J 0805
R569	30000459	RES CF 1/4W 100R J
R570	30000531	RES CF 1/4W 15K J
R571	30000466	RES CF 1/4W 1K J
R572	30000475	RES SMD 1/10W 10K J 0805
R573	30000721	RES SMD 1/10W 4.7K J
R574	30000692	RES SMD 1/10W 3.9K J 0805
R575	30000475	RES SMD 1/10W 10K J 0805
R576		
R578		
R579	30000721	RES SMD 1/10W 4.7K J
R580	30000464	RES SMD 1/10W 100R J
R581	30000588	RES SMD 1/10W 220R J 0805
R582	30000464	RES SMD 1/10W 100R J
R583		
R584	30000563	RES SMD 1/10W 1.8K J (0805)
R585	30000480	RES SMD 1/10W 100K J (0805)
R586	30000480	RES SMD 1/10W 100K J (0805)
R587	30000712	RES CF 1/4W 470R J
R588	30000717	RES SMD 1/10W 470R J (0805)
R589	30000529	RES SMD 1/10W 1.5K J
R590		
R591	30000721	RES SMD 1/10W 4.7K J
R592		
R593	30000721	RES SMD 1/10W 4.7K J
R594		
R595	30000475	RES SMD 1/10W 10K J 0805
R596	30000475	RES SMD 1/10W 10K J 0805
R598		
R599	30000717	RES SMD 1/10W 470R J (0805)
R601	30000471	RES CF 1/4W 10K J
R602	30000459	RES CF 1/4W 100R J
R605	30000466	RES CF 1/4W 1K J
R608	30002583	JUMPER WIRE 0.6MM
R610	30001125	RES MO 2W 2.2K J
R611	30001215	RES FUSE 1W 1R J
R613	30000837	RES CF 1/4W 9.1K J

C2842N		
CRN	Part No.	Description
R614	30000815	RES CF 1/4W 8.2K J
R615	30000837	RES CF 1/4W 9.1K J
R616		
R617	30000599	RES CF 1/4W 220K J
R618	30000588	RES SMD 1/10W 220R J 0805
R619	30000815	RES CF 1/4W 8.2K J
R620	30001082	RES MO 1/2W 1K J
R621		
R626	30000466	RES CF 1/4W 1K J
R628	30001230	RES FUSE 1/2W 27R J
R630	30001082	RES MO 1/2W 1K J
R700	30000466	RES CF 1/4W 1K J
R702	30000551	RES CF 1/4W 18R J
R703	30000911	RES MF 1/4W 1.8R J
R704	30001210	RES FUSE 1/4W 100R J
R705	30000580	RES CF 1/4W 22R J
R706	30000949	RES MF 1/4W 3K G
R707	30000655	RES CF 1/4W 330R J
R708		
R709		
R710	30000718	RES CF 1/4W 4.7K J
R711	30000500	RES CF 1/4W 12K J
R714		
R715		
R716	30000466	RES CF 1/4W 1K J
R717	30000712	RES CF 1/4W 470R J
R802	30002583	JUMPER WIRE 0.6MM
R803	30002583	JUMPER WIRE 0.6MM
R805	30000633	RES CF 1/4W 27K J
R806	30001129	RES MO 22K 3W J
R807	30000466	RES CF 1/4W 1K J
R808	30000803	RES SMD 1/10W 7.5K J
R809	30000469	RES SMD 1/10W 1K J 0805
R810	30000597	RES SMD 1/10W 22K J
R811	30000597	RES SMD 1/10W 22K J
R812	30000519	RES CF 1/4W 150R J
R813	30000475	RES SMD 1/10W 10K J 0805
R814	30000706	RES CF 1/4W 47R J
R816	30000540	RES CF 1/2W 1.5M J (400V)
R817	30001260	RES WW 5W 2.2R J RAD.
R818	30000466	RES CF 1/4W 1K J
R821	30000602	RES SMD 1/10W 220K J 0805
R822	30001129	RES MO 22K 3W J
R823	30001037	RES MF 1/4W 99K F
R824	30000925	RES MF 1/4W 2.2K F
R825		
R827		
R828	30007759	RES CF 1W 47K J
R829	30000469	RES SMD 1/10W 1K J 0805

C2842N		
CRN	Part No.	Description
R831	30000471	RES CF 1/4W 10K J
R832	30000721	RES SMD 1/10W 4.7K J
R833	30000710	RES SMD 1/10W 47R J (0805)
R834	30000818	RES SMD 1/10W 8.2K J (0805)
R835	30000580	RES CF 1/4W 22R J
R836	30000706	RES CF 1/4W 47R J
R842		
R844	30000471	RES CF 1/4W 10K J
R845	30001257	RES MG 1/2W 4.7M J
R849	30000534	RES SMD 1/10W 15K J (0805)
R850	30000569	RES CF 1/4W 180K J
R860	30000603	RES CF 1/2W 2.2M J (400V)
R865		
R866		
R867		
R868	30000810	RES CF 1/4W 820R J
R869	30000810	RES CF 1/4W 820R J
R870	30001159	RES MO 1W 0.33R J
R871	30000471	RES CF 1/4W 10K J
R879	30000718	RES CF 1/4W 4.7K J
R885		
R886		
R888	30000500	RES CF 1/4W 12K J
R901	30000525	RES CF 1/2W 1.5K J
R902	30000525	RES CF 1/2W 1.5K J
R903	30000525	RES CF 1/2W 1.5K J
R905	30000525	RES CF 1/2W 1.5K J
R906	30000525	RES CF 1/2W 1.5K J
R907	30000459	RES CF 1/4W 100R J
R908	30000459	RES CF 1/4W 100R J
R909	30000459	RES CF 1/4W 100R J
R914	30001242	RES FUSE 1/4W 47R J
RX61	30000548	RES CF 1/4W 1.6K J
S062	30002583	JUMPER WIRE 0.6MM
S065	30001734	JUMPER SMD (0805)
S070		
S107		
S112		
S113		
S114		
S202	30001734	JUMPER SMD (0805)
S204	30002583	JUMPER WIRE 0.6MM
S301	30001734	JUMPER SMD (0805)
S403	30001734	JUMPER SMD (0805)
S405	.	.
S415		
S504	30002583	JUMPER WIRE 0.6MM
S538		
S550	30001734	JUMPER SMD (0805)

C2842N		
CRN	Part No.	Description
S601	30002583	JUMPER WIRE 0.6MM
S602		
S801	30001734	JUMPER SMD (0805)
S805	30002583	JUMPER WIRE 0.6MM
S806	30001734	JUMPER SMD (0805)
S864		
SC050	30001865	SOCKET SCART (R)
SC051	30001865	SOCKET SCART (R)
SP901	30000429	SPARK GAP (GLASS)
SW501	30002178	SWITCH TACT SKHHLU
SW502	30002178	SWITCH TACT SKHHLU
SW503	30002178	SWITCH TACT SKHHLU
SW504	30002178	SWITCH TACT SKHHLU
SW505	30002178	SWITCH TACT SKHHLU
SW801	30002175	SWITCH ON/OFF 2.5A/100A
TH801	30001270	PTC 9 OHM
TR601	30002090	LINE DRIVER NEW TYPE
TR602	30002051	TRF FBT COM.FOC.(AK19-AK20)90°
TR801	30002100	LINE FILTER 2*27MH
TR802	30002083	TRF SMPS AK19 90° (170-270V)
TU201	30001930	TUNER WSP (VST)
VL301	30002037	ADJ COIL VIF 38.9 Q80
X301	30001756	XTAL 18.432MHZ
X401	30001748	XTAL 4.433619 MHZ
X501	30006662	XTAL 6MHZ
Z301	30001706	FILTER SAW OFWK9453
Z302	30001692	FILTER SAW OFWK3953M
Z401	30001693	FILTER SAW G3962